The RUBBER AGE

Published TWICE-A-MONTH at New York

Vol. 21 JULY 10, 1927 No. 7

R. T. VANDERBILT CO.

INCORPORATED

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you can build a more economical compound with equivalent or better quality in it.

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and SERVICE

Rubber Regenerating Co.

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XX
ZINC OXIDE

The Standard Zinc Oxide of the Rubber Industry

RUBBER TESTED FOR:

Pneumatic Tires
Solid Tires
Inner Tubes
Air Bags
Mechanical Goods
Rubber Footwear
Rubber Flooring
Etc., Etc.

No. 2 of a series of advertisements describing the specific uses of each of the EIGHT Brands of Zinc Oxide supplied to the Rubber Industry

New Jersey zinc

The New Jersey Zinc Company
Established 1848
Products Distributed by
The New Jersey Zinc Sales Company
160 Front Street, New York City
CHICAGO · PITTSBURGH · CLEVELAND · SAN FRANCISCO

The RUBBER AGE

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RUBBER SERVICE A16 LABORATORIES CO.

SUPREME for MOLDED TUBES

SCORCHY ULTRA-ACCELERATORS ARE NOT NEEDED FOR MOLDED TUBES
A-16 GIVES 5 MINUTE CURES

The formula given was mixed and calendered 4 ply .060" gauge. Tubes were cured in a 4.40 Kuhlke tube mold for periods of from 3 to 7 minutes. The time given was the closed period of the mold. Tests on the cured stocks (pulls made parallel to calender grain) cut from the finished tubes are as follows:

Formula	lbs.	oz.
Smoked Sheets	60	7
Zinc Oxide	3	
Blanc Fixe	27	
Stearic Acid		8
Sulfur	2	5
A-16		12
	100	- 0

Cure at 60 lbs.	Load at 500%	Tensile	Elongation
3 minutes	974	3200	730%
4 "	1196	3745	740
5 "	1223	4010	735
6 "	1380	4125	725
7 "	1405	3835	700

Additional strips were aged in the Bierer-Davis oxygen bomb under 300 pounds oxygen pressure at 70° C for 36 hours (equivalent to 4 years natural aging) and on subsequent testing showed:

Cure at 60 lbs.	Bomb Aging	Load at 500%	Tensile	Elongation	% Loss in Tensile
3 minutes	36 hrs. / 70° / 300 lbs.	1050	3155	730%	1.4
4 "	"	1227	3440	710	8.2
5 "	"	1230	3785	730	5.6
6 "	"	1403	3760	710	8.8
7 "	"	1513	3695	680	3.7

Note the wonderful range of cure of this stock. Since the proper cure, as shown by the data above, is slightly less than 5 minutes, this stock will give a 5 minute cycle, or 12 tubes per hour per mold. The oxygen bomb test indicates the aging life of this tube to be excellent, as would be expected of A-16 stocks, and no anti-oxidant is therefore needed.

Further details on the use of A-16 and other materials in molded tube work may be had on request.

The RUBBER SERVICE LABORATORIES CO.

Office and Laboratories
Akron, Ohio

Manufacturing Plant
Nitro, W. Va.

THE NAUGATUCK CHEMICAL COMPANY
Materials for the Rubber Goods Manufacturer
NEW YORK

MONEX

Tetra Methyl Thiuram Monosulphide Ultra Accelerator

MONEX is being used to accelerate the vulcanization of almost every type of rubber goods. It is a pure chemical—a fine dry powder—non toxic to workers and economical. No other available accelerator has these desirable characteristics together with such great resistance to mill scorching and curing in stock storage.

Any accelerator used in so many different kinds of goods and so many different methods of curing is worthy of serious consideration by all manufacturers of heat cured rubber goods.

We offer full cooperation in the work necessary for the testing and adoption of Monex in any of your products.

THE NAUGATUCK CHEMICAL CO.
1790 BROADWAY
NEW YORK CITY, N. Y.

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The
RUBBER AGE
The Only Twice-a-Month Rubber Publication

Vol. 21 NEW YORK, JULY 10, 1927 No. 7

COURT APPROVES USE OF RUBBER FLOORING

Appelate Division of N. Y., Supreme Court Dismisses Ban on Rubber Flooring In Buildings Exceeding 150 Feet in Height —Decision Will be Appealed.

The order promulgated some time ago by the Board of Standards and Appeals of the city of New York, and confirmed by the Supreme court of the state, forbidding the use of cork, rubber, or linoleum flooring in buildings over 150 feet in height was recently dismissed by the Appellate Division of the Supreme court, with but one justice dissenting.

The Board of Standards and Appeals affirmed a decision of the Superintendent of Buildings refusing to issue a certificate of occupancy to certain buildings erected in New York containing flooring of linoleum, cork, or rubber tiling cemented to the finished floor surface. The refusal of the municipal authorities to issue the certificate of occupancy was based on the belief that this type of flooring did not conform to the specifications of the building code, and was not fireproof. The building in question was a fire-proof structure, over 150 feet in height. The building code provides that in buildings of over 150 feet in height the floors shall be of incombustible material or of fire-proof wood. The Superintendent of Buildings claimed that rubber flooring was combustible.

The Appellate Division of the Supreme Court, in rendering its opinion, stated that the petitioner had conformed to all specifications of the building code, in that he had constructed his floors of fireproof material and had placed over these floors ordinary floor coverings used for many years in buildings of the city, and that these coverings, consisting of rubber, cork or linoleum, were in no way to be construed as part of the floor structure. "It is significant," the decision reads, "that the prohibition of the statute is against the use of combustible material 'in' the floors and not upon the floors. The intent (of the building code) was to forbid the use of combustible material within the floor structure, but not upon the surface of a completed floor, fireproof, in accordance with the ordinance."

The Superintendent of Buildings has announced that the city will appeal from this decision of the Appellate Division, which, it was claimed, overturned the building department practice of a quarter of a century.

PIRELLI WILL BUILD BRITISH TIRE PLANT

The Pirelli Company, leading rubber manufacturers of Italy, have decided to build a large tire factory in England, according to a recent report from London. Pirelli tires have been imported and used in the United Kingdom for many years but such trade is very difficult since the high import duty on tires was imposed last April. In deciding to escape the duty by building its tires for British trade within the country, Pirelli is following the lead of Goodrich and Michelin, both of which companies have British factories already in operation. Pirelli already has subsidiary companies operating two insulated cable factories in Great Britain. In Italy, a diverse line of rubber goods are produced.

NEW RUBBER CEMENT ORDINANCE IN FORCE

The ordinance to amend chapter 10 of the New York City Code of Ordinances, relating to explosives and harzardous trades, and governing the transportation, storage, sale and use of rubber cement, became effective June 21. The ordinance was approved by the Board of Aldermen and was awaiting the signature of the Mayor. In view of the fact that the ordinance was neither signed nor vetoed by the Mayor, it became automatically effective. The new ordinance, to which the sale and transportation of rubber cement is now subject, amends some of the more stringent regulations that formerly existed in Chapter 10 of the ordinance code.

MAIL ORDER FIRMS MAY INCREASE TIRE PRICES

Advances On Tire Prices From 5% to 8% May Occur On September 1—Claim High Price of Cotton Offsets Decrease In Price of Crude Rubber

Mail order prices on automobile tires and tubes, covering the whole range of sizes, will probably be advanced from 5% to 8% on September 1, according to reports coming from Chicago and Akron. Two of the leading mail order houses are now printing their fall catalogues in which tire prices are said to be restored to levels higher than those which obtained before the recent price cuts, and higher than at any time this year.

Slightly more than a month ago Sears, Roebuck Co., announced a downward revision on their tire prices of from 5% to 7% in order to keep them on the same level with those of its principal competitor, Montgomery, Ward & Co. The latter house has been doing a larger tire business than Sears, Roebuck Co., and the price cut was made in order to keep the sales total of both companies fairly even. The revision in prices, however, brought about a similar revision in prices of second grade tires by the large manufacturers, such as Goodyear, Goodrich, Firestone, Lee, etc., in order to meet competition. Following this action on the part of the mail order houses and the manufacturers, the price of crude rubber slumped on the market. It was claimed that tire price cutting both by manufacturers and mail order houses was in part responsible for this slump.

Since mail order prices of tires will not go into effect until September 1, it is not thought that the announcement will have any immediate effect on the market. Despite continued rumors, there is no real evidence that tire manufacturers will make any revision of their tire prices at present. As mail order prices hold for a period of six months, the increase is interpreted as reflecting higher priced cotton, following the Mississippi floods in territory where much cotton for tire fabric is grown, and is forecasting the possibility of higher tire prices generally.

EXCHANGE MEMBERS TO VOTE ON COMMISSIONS

Members of the Rubber Exchange of New York will vote on an amendment July 12 proposing changes in rates of commissions. The effect of the amendment, if adopted, will be sweeping reductions in the rates of commission for both members and non-members. The proposed reductions range as high as 40%. On May 23 members of the Exchange approved a number of alterations in the by-laws which were referred to the rules committee for drafting into form for submission to the Board of Governors and later for ratification by the members. Among these changes approved by the members and submitted to the Board of Governors was the proposal to change the rates of commission.

The amendment provides for the following changes: On each contract bought or sold for a resident of the U. S. or Canada, not a member of the Exchange, $15 instead of $25. On each contract bought or sold for a person residing outside of the U. S. or Canada, not a member of the Exchange, $20 instead of $30. For members of the Exchange in the U. S. or Canada, $7.50 instead of $12.50. For foreign members of the Exchange, $12.50 instead of $17.50. For each contract bought or sold by one member of the Exchange for another, giving up his principal on the day of the transaction, $1.00 instead of $1.25.

F. R. Henderson, president of the Exchange, in commenting on the amendment, said that if it were adopted, wider public interest in the market would result and both rubber manufacturers here and producers abroad would, because of the savings in commissions, avail themselves more freely of the hedging facilities, offered by the Exchange.

MAY RUBBER EXPORTS TOTALED $5,600,000

May exports of rubber products were valued at more than $5,600,000, representing a decline from March and April figures, according to the Department of Commerce. In view of the fact that April exports were record breaking, the May decline can not be regarded as serious, since rubber exports during the current year are well ahead of last year. Unit values of May automobile casing exports continued the gradual recovery from the low figure of $12.18 in February. The value per casing in May was $13.17. Unit values of inner tubes rose 14 cents above the first quarter average, or to $2.25 a tube in May.

In April the United Kingdom was the leading customer for casings. The largest shipments of casings in May went to Argentina, the leader in the first two months of both 1926 and 1927. Shipments to the United Kingdom, probably influenced by new import duties, declined about 20,000 units.

R. S. WILSON HEADS GOODYEAR ADVERTISING

The office of advertising manager of the Goodyear Tire & Rubber Co., of Akron, was filled on June 27 with the appointment of R. S. Wilson, formerly manager of the western division in charge of sales. Mr. Wilson succeeds Lucian L. King who on May 15 resigned as advertising manager in order to enter the field of out-door advertising.

Mr. Wilson has been associated with the Goodyear Company 15 years, starting work as a repair clerk in 1912. Later he was transferred to Detroit where he was an adjuster, and following this post he returned to Akron as manager of the service department. His next promotion was as head of the truck tire department and from this position he was made in 1921 manager of the western division in charge of sales. He was born in Wooster and is a graduate of Princeton University.

Mr. Wilson is succeeded in his former post by A. G. Partridge who has been in in the tire business since 1899. He was connected with the Firestone Tire & Rubber Co., when that company first started in business and in the course of time became sales manager. Mr. Partridge was for several years engaged in the real estate business in Florida, but returned to Akron in October of last year and became a member of the sales manager's staff of the Goodyear Company. As head of the western division in charge of sales he will maintain his headquarters in Akron.

R. S. Wilson who was recently appointed Advertising Manager of Goodyear Tire and Rubber Co.

A. G. Partridge succeeds Mr. Wilson as Manager of Western Division in Charge of Sales.

Foreign Tire Imports Cut

May imports of tires into the United States totaled 247 units at a value of $4,685, according to figures released by the Department of Commerce. This compares with April imports totaling 918 tires valued at $15,423. Of the total number of tires imported in May, 150 came from France, 30 from Great Britain, 57 from Canada and 10 from all other countries. In the first five months of the current year tire imports totaled 1,295 as compared with 1,346 in the corresponding period last year.

Mrs. N. C. McDowell

Mrs. N. C. McDowell, mother of R. Dent McDowell, president of the India Machine and Rubber Mold Co., died in the Peoples Hospital in Akron on June 26. She was 66 years of age, and had been a resident of Akron for 24 years. Mrs. McDowell is survived by one other son, C. Blake McDowell, an Akron attorney, and two daughters, a brother and two sisters. She is also survived by her mother, who is 97 years of age, and a resident of Dalton, O.

Stanley B. Chamberlain

Stanley B. Chamberlain, head of the Singapore office of the Fisk Rubber Co., and buyer for that firm, died recently in Singapore. He was born in Dorchester, Mass., and after graduating from high school there, came with his parents to Springfield, Mass. He is survived by his parents, his wife and a son. Mr. Chamberlain had been associated with the Fisk company 12 years.

Frederick Cook

Frederick Cook, former treasurer of the Woonsocket Rubber Co., of Milville, Mass., died on June 18 at his home in Providence, R. I. He was 87 years of age. After being connected with several woolen mills as treasurer and bookkeeper he became connected with the Woonsocket Rubber Company in 1885 where he accepted the office of treasurer in May of that year. For 17 years he remained at this post, retiring in June, 1902, after introducing many innovations in method and practice in his department.

Ralph Van Vechten

Ralph Van Vechten, a director of the Goodyear Tire & Rubber Co., and vice-president of the Continental & Commercial bank of Chicago, died in that city June 27. He had been ill for several months. Mr. Van Vechten is survived by his brother Carl Van Vechten, novelist and critic. The place of the deceased on the Goodyear board of directors will probably not be filled as new directors are to be chosen at the company's annual meeting July 11.

GOODYEAR IS WORLD'S LARGEST RUBBER CO.

U. S. Rubber Now Holds Second Place—Goodrich Comes Third—Comparison of Net Sales and Property Accounts in 1926—Goodyear's Sudden Growth.

In connection with the recent $60,000,000 bond offering of the Goodyear Tire & Rubber Co., of Akron, and the adjudication of its legal difficulties out of court, attention has been called to the fact that this company is now the largest rubber concern in the world, reducing its nearest competitor, the U. S. Rubber Co., to second place, with the B. F. Goodrich Co., holding third place. Formed in 1898, the Goodyear Tire & Rubber Co., had by 1923 reached production of its fiftieth million tire, in 1925 its seventy-fifth million and in May of this year had reached its hundredth million tire. The rapidity with which the company has grown particularly in the past two years, is not generally realized.

At the present time the company's three plants in Ohio, California and Canada are at a point of production never before achieved. The Akron plant is producing slightly over 50,000 tires a day, while the three plants combined are producing over 65,000 tires a day. This volume is generally conceded to be due to Goodyear's constant development of new and improved tires, as instanced by its new balloon tire production of which the factory is far behind orders. This new tire is declared to be scientific in design, producing unusually long wearing and non-skid qualities, and is the result of more than two years testing. The company's development of pneumatic tires for bus and truck use has also been successful, and this branch of the business is said to have extremely important sales possibilities in the future.

Goodyear's net sales growth in the past three years in comparison with two of its main competitors, the U. S. Rubber Co., and the B. F. Goodrich Co., is shown in the following table:

	Net Sales		
	Goodyear	U. S. Rubber	Goodrich
1926	$230,161,357	$215,528,000	$148,391,000
1925	205,999,830	206,474,000	136,240,000
1924	138,778,000	172,214,000	108,818,000
Average	191,646,398	198,072,000	151,483,000

It can be seen from this table that although the average net sales of the U. S. Rubber Co., in these three years is larger than that of the Goodyear company, the latter has considerably outstripped its competitor in 1926 sales, and from present indications will do so again in 1927. While both U. S. Rubber and Goodrich sales jumped considerably from 1924 to 1925, the Goodyear advance is even more remarkable.

A comparison of the property accounts and sales of Goodyear and U. S. Rubber for the year ended December 31, 1926, affords an interesting illustration of the difference between these two items in the case of both companies:

	Property Account	Sales
U. S. Rubber	$814,631,856	$215,528,000
Goodyear	83,128,708	230,161,357

In recent years the Goodyear company has not only modernized its plants in keeping with the growth of its sales but it has found it desirable to construct a factory in Sidney, Australia. A $4,000,000 Australian company has been formed, $1,500,000 of its capital having been raised through the sale in Australia of 8% preferred stock. The entire common stock has been retained by the parent company. While Goodyear is now acknowledged to be the largest producer of automobile tires in the world it is also a large manufacturer of mechanical and other rubber goods. In 1926 the company produced in addition to mechanical items, more than 75,000,000 pairs of rubber heels.

J. H. Diehl

Photo U. & U.

J. H. DIEHL BECOMES SALES HEAD FOR MASON

Announcement is made from the general offices of the Mason Tire & Rubber Co., of Kent, O., that John H. Diehl, vice-president, has taken over all sales of the corporation. Mr. Diehl has been a sales executive of the Mason Tire & Rubber Co. during the last ten years and in his new capacity as sales head will be actively associated with dealers and distributors over the country.

Mr. Diehl joined the Mason company in 1917 as sales manager, following 15 years of tire selling with the B. F. Goodrich Co., and the Portage Rubber Co. In 1918 he was elected to the board of directors and made vice-president. His sales experience and ability has been a helpful factor in the growth of the Mason organization.

Firestone Annual Picnic

The annual picnic of the Firestone Tire & Rubber Co., of Akron was held on June 25 when more than 2,500 employees of the company attended.

1925 CENSUS REVEALS RUBBER TRADE GROWTH

Final Report of Census Bureau Shows Jump of 31% In Rubber Industry Over 1923—Products Valued Over One Billion Dollars—498 Plants In U. S.

The final report of the Bureau of the Census covering a summary of all rubber manufacturers and their products in the United States in 1925 has just been issued.

From the present report it appears that the wholesale value of rubber products in 1925 totaled $1,255,414,112, or an increase of 31% over the value of products manufactured in 1923, and an increase of 317% over products manufactured in 1914. The census of 1925 covers 498 rubber factories employing 141,121 workers whose total wages amounted to $190,562,920. This compares with the census of 1923 when 529 factories were listed, employing 137,868 workmen whose total wages were $182,084,056.

The value of tires and inner tubes produced in 1925 was $925,001,520, rubber boots and shoes, $115,934,554, and all other rubber goods $214,478,038. The value of tires and tubes in 1925 was over twice the value in 1921. The number of factories manufacturing tires and tubes in 1925 was 126, as compared with 160 in 1923 and 178 in 1921. The number of rubber boot and shoe manufacturers has similarly decreased since 1921, while the whole number of parts in 1925 decreased 5.9 % since 1923.

RUBBER SECTION PLANS AT A.C.S. MEETING

Preliminary plans of the rubber division at the seventy-fourth annual meeting of the American Chemical Society to be held September 5 to 12 in Detroit, have been arranged. The rubber division will hold its meetings, according to present plans, in the Book-Cadillac Hotel on Wednesday afternoon, September 7, all day Thursday, September 8, and Friday morning, September 9. A dinner for the rubber division is also planned for Thursday, September 8.

In conjunction with the regular meeting, the Executive Committee of the Rubber Division has planned a number of interesting papers on reclaimed rubber in which both the processing of scrap rubber for producing certain grades of reclaim and the uses of reclaims will be thoroughly discussed.

The headquarters of the A.C.S. as a whole will be in the Statler Hotel, but it has been suggested to the members of the rubber division that they arrange for sleeping quarters in the Book-Cadillac so that the whole membership of the division will be together under one roof. So far, no definite action has been taken by the executive committee regarding the formation of local chapters.

GOODYEAR GETS PRIZE FOR AIRSHIP DESIGN

Drawing of Huge Dirigible For War Purposes Wins $50,000 Award—Ship Would Cost $5,000,000 To Build—Goodyear May Get Contract For Construction.

The Goodyear Tire & Rubber Co., Akron, was awarded on June 28 first prize in the Navy's competition for a design of a new airship of 6,500,000 cubic feet gas capacity. A prize of $50,000 is carried with the award for the design, but it cannot be given to the company which receives the government contract to construct the ship. The Navy board, which was headed by Rear Admiral W. A. Moffett, recommended that a contract for the construction of the dirigible be entered into with the Goodyear Company.

The Akron Company's design was submitted with the understanding that the firm was prepared to build the ship, which would cost the government in the neighborhood of $5,000,000. Three years would be required to construct the dirigible, which would be about 15% longer than the Los Angeles and about 50% greater in diameter. The proposed dirigible would be capable of carrying five airplanes, a crew of forty-five officers and men, and fly at a speed of eighty miles an hour. The ship, if built, will be 720 feet long and 135 feet in diameter and will be used to cooperate with the fleet. Her cruising range, when fully equipped, would be about 12,500 statute miles.

W. C. Young, manager of the Goodyear aircraft division, is reported as saying that 15 to 20 experts, headed by Dr. Karl Arnstein, chief engineer of the old Zeppelin company of Germany, cooperated in drawing the designs for the dirigible. The Navy Board received thirty-seven ideas and designs.

Rubber Raft Saves Byrd

Richard E. Byrd, commander of the airplane "America" and his crew of three men who flew from New York to Versur-Mer, France, where the plane was forced to descend in the English Channel, were saved from possible drowning when they took to a rubber raft, capable of supporting four men, and rowed to shore. The raft was stored on board the "America" for such an emergency. It could be deflated and stowed away easily.

J. WALTER DRAKE WILL LEAVE COMMERCE DEPT.

J. Walter Drake, of Detroit, assistant Secretary of Commerce since June, 1923, is planning to return to business in the early fall. He has been anxious to reenter business life for some time, but has been delayed from time to time at the request of Secretary Hoover. Last year Mr. Drake's plans were disrupted by the need of staying with the Department in connection with the organization of the new Aeronautics branch, and more recently he found it necessary to postpone his departure as a result of the call of Secretary Hoover to the Mississippi flood area.

Before accepting the position of assistant Secretary, Mr. Drake was chairman of the board of the Hupp Motor Car Corporation. He was also a director of the Chamber of Commerce of the United States and director of the National Automobile Chamber of Commerce. During his term of office in the Commerce Department many committees of the rubber industry had occasion to seek information and advice from him.

COMPANY MANUFACTURES NEW COLLAPSIBLE RIM

The accompanying photograph shows a new collapsible rim which will be placed on the market in August by the Cruz Collapsible Rim Corporation of New York. The product will be ready for the foreign

markets by January, 1928. These rims are being manufactured at present on a small scale in the company's shop for demonstration purposes and to supply agents and distributors with actual working models of the finished product. The rim may be opened by pressing against one of the short segments and pushing the other down, which releases both segments. In replacing the rim, the short segments may be turned down and snapped together with the foot. The company claims that no tools are necessary for removing or mounting the rim. Letters patent granted March 15, 1927, by the U. S. Patent Office. International patents pending.

Golf Ball Imports Decline

May imports of golf balls into the United States show a considerable decline from April, with May imports totaling 299,644 balls as compared with April imports of 493,296 units. Imports in May of last year totaled 381,511. The value of May, 1927, imports was $119,716, a unit value of 40 cents per ball, as compared to 40.6 cents in April and 34.7 cents in March.

DUTCH RUBBER ASS'N MAKES ANNUAL REPORT

Organization Puts 1927 Rubber Output of Dutch East Indies at 215,000 Tons on Dry Basis—Propaganda Department Reports on Its Numerous Experiments.

The International Association for Rubber and Other Cultivations in the Netherlands Indies has published its thirteenth annual report which covers the year 1926. At the end of the year the Association had 270 members of which 206 were companies and 64 individuals.

The total rubber production of the Netherlands Indies in 1926 is estimated by the Association at 209,000 tons, comprising 124,000 tons of estate rubber and 85,000 tons of native (dry) rubber. The production of rubber for 1927 is estimated at 215,000 tons, of which 130,000 tons are estate rubber. The Association appears to believe that the production of native rubber will not increase in the current year.

The acreage of rubber in the Dutch East Indies at the end of 1925 is stated at 1,025,428 acres. No figures are yet available to cover any increase in 1926. During the first ten months of 1926 the export duty on native rubber yielded 5,700,000 guilders of revenue. In reply to a question put by the Association, it was ruled that the native rubber which was treated in the newly established factories in the Islands was liable to the duty just as if it had been exported without cleaning.

The propaganda department of the Association rendered a separate report which has just been released. The effort to increase the consumption of rubber has been made principally along the lines of crepe soles, rubber flooring, rubber pavements and new uses for latex. A section of pavement laid at Scheveningen and continually tested was found to be subject to cracking and creeping. During 1927 an effort will be made to overcome these faults.

With regard to new uses for latex, the propaganda department says that during 1926 latex for experimental purposes was distributed to 22 applicants Experiments on the preservation of eggs with latex did not give favorable results. The tests in connection with preserving fruit with latex made it appear that only large scale experiments with tomatoes were justified: those with pears, apples and grapes will have to be confirmed by the laboratory since they are less promising.

Record Rubber Shipment

A single shipment of rubber, totaling 1,128,000 pounds and valued at approximately $500,000, was recently received at San Pedro, Calif., for consignment to southern California rubber manufacturers. This is reported to be the largest single shipment of rubber ever received at a Pacific port.

SAGAMORE

Smooth in Texture

Light " *Gravity*

Rich " Rubber

Low " *Volume-Cost*

A new dark reclaim that fills a special need between a whole-tire stock and a tube reclaim—in frictions, black or tan heels, tubing, etc.

U.S. RUBBER RECLAIMING CO. Inc.

100 East 42 St. N.Y. — Factory-Buffalo, N.Y.

44 years Serving the Industry— Solely as Rubber Reclaimers

Akron Representative: F. F. Dugan, 617 Second National Bank Building

WAREHOUSES: Akron, Chicago, Trenton, Toronto

The Era of Grit ?

¶ Notwithstanding the modern changes in rubber compounding heretofore considered impossible, we believe the principle of fineness of particle size and freedom from grit is fundamental. We believe that no matter how finely the grit in clay is pulverized, when used in any reasonable volume, it cannot make a suitable pigment in first class rubber stocks. We believe the introduction of such pigments in frictions, inner tubes, high grade mechanicals, and particularly in high tensile reclaim that ultimately goes into such stocks, is highly dangerous.

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Represented by **Akron Rubber Mold & Machine Co.**

INCREASE PERSONNEL OF ANDERSON-PRICHARD

The Anderson-Prichard Oil Corporation of Oklahoma City, manufacturers of rubber solvents, cleaners, naphthas and mineral spirits have elected C. L. Mayhall as director in charge of refined oil sales. Mr. Mayhall, who ten years ago started work with the Ohio Cities Gas Co., now the Pure Oil Co., is thoroughly experienced in oil refining and marketing. He was vice-president and general manager of the Imperial Refining Co., and later a director of the Western Petroleum Refiners Association.

In addition to electing Mr. Mayhall, the Anderson-Prichard corporation elected W. M. Sturges a director of the company and C. H. Dresser as director in charge of industrial naphtha sales. Mr. Dresser has been with the company for several years as sales manager and is well known in the business, especially in the industrial world where naphthas of technical specifications are used. He has founded an industrial naphtha distribution system through independent jobber representation in the industrial centers. Through close co-operation he has assisted in developing several new specification products which have materially contributed to the efficient operation of these industries.

The division of sales became necessary by reason of the rapid growth of the Anderson-Prichard Oil Corporation, which now has refineries at Cyril, Oklahoma, and Wichita Falls, Texas, and one at Colorado, Texas, specializing on anti-knock gasoline manufactured directly from crude, together with a number of by-products, running a combined daily total of 10,000 barrels of crude oil.

The officers of the Anderson-Prichard Oil Corporation are: L. H. Prichard, president; J. Steve Anderson, vice-president; P. H Anderson, secretary and treasurer.

Firestone Quits Committee

Harvey S. Firestone, president of the Firestone Tire & Rubber Co., withdrew recently as a member of the permanent building fund committee of the Better Akron Federation. The question before a meeting of the committee, which Mr. Firestone attended, was the location of a new post office for Akron. Mr. Firestone contended that the government should build on Broadway while others favored another site on E. Market Street. The government has already decided to build the post office on the latter location. Mr. Firestone withdrew from the committee after stating that apparently his views on civic questions were not in accord with those of other Akron citizens. A sub-committee was appointed to request Mr. Firestone's return to the building fund committee.

Larger Ruberoid Plant

The Ruberoid Co., of Bound Brook, N. J., according to reports, is formulating plans for the enlargement and modernization of its plant, which will include new buildings and the acquisition of a felt factory near Philadelphia. At a meeting of stockholders, to be held July 11, reclassification of the capital stock of the Ruberoid company is to be proposed. It is said that no new machinery will be purchased.

Organize Rubber Company

The Ohio Pail Co., of Middlefield, O., has recently organized a subsidiary company to be known as the Johnson Rubber Co., which will manufacture rubber tubing and a special type of strip rubber. Several months ago the Ohio Pail Co., installed machinery for the manufacture of rubber tubing for use in their own product. In order to enlarge this field and to sell their rubber product to other manufacturers, the Johnson Company was formed. Victor M. Brediger is general manager, J. E. Johnson president, S. M. Johnson vice-president and H. G. Johnson secretary and treasurer. The offices of the rubber company are the same as those of the Ohio Pail Co.

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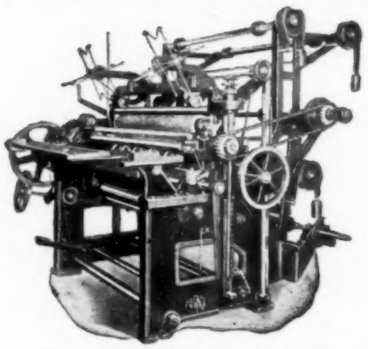

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The Stamford Rubber Supply Company
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EXCHANGE PRICES UP AFTER RECENT LOSSES

After the severe losses which occurred on the Rubber Exchange in the early part of June, prices began to recover somewhat on the 20th and during the remainder of the month the level hovered around 36c. Nevertheless the tone of the Exchange has been nervous with a see-saw movement in which bears and bulls have each of them been partially successful. The largest turnover in the past two weeks occurred on June 20 when 998 contracts sold, and June 23 selling 895 contracts.

Encouraged by weakening London and Singapore markets on June 28, the bears in crude rubber launched an attack on prices in a session which had plenty of activity and all the earmarks of another speculative drive. They met with fair success, the Exchange winding up with declines of from 80 to 120 points. The July delivery, which had been maintained for a week between 36.50c and 36.70c, after having been pulled up from 34.70c, the record low of the movement, broke to 35.50, down 100 points. On June 30 crude rubber was easier and fell below the 36c level. With the beginning of July, and the advent of a three-day holiday, business in crude rubber was reduced to a minimum. The London cable estimated another decline in the stock of around 800 tons.

Rubber Pool Affects Prices

The recovery in prices on the Exchange was attributed to the report that the rubber pool, composed of large tire manufacturers, had decided to extend its existence for another eight months. This action was interpreted to mean that the big rubber interests of the country have decided, following the recent pronounced weakness in prices, that the time had come to exert a stabilizing influence on the market through concerted buying. Following this information, it has just been announced by the directors of the Exchange that an amendment to the by-laws, proposing a reduction on commission rates, would be voted upon by the members on July 12. If this amendment is passed, it will encourage greater activity on the Exchange.

Prices on the Exchange for all positions appear on this page.

CATALPO!

Late Stock Prices

	Last Price		1927	
	July 1	July 17	High	Low
Ajax	8¼	8⅛	12⅞	9
Firestone	136¼	136¼	140	117
do 6% pfd.	106	106¼	107	107½
do 7% pfd.	102½	103½	103½	98½
Fisk	15¼	15½	18¼	16
do 1st pfd.	84¼	83	89	81
General	145	145	155	140
do pfd.	102½	105	106	99¼
Goodrich	53	53⅝	58¾	42¾
do pfd.	98	99	103⅛	95
Goodyear Com.	50	46	53¼	29½
do pr. pfd.	110⅛	109⅞	118⅛	104½
do pfd.	112½	112	117	98½
Hood	—	—	47	42½
India	23	25	30	28
Intercontinental	—	11¾	15¾	11½
Kelly Springfield	23⅜	19⅝	24¾	9½
do 1st pfd.	—	—	70	44
do 8% pfd.	66	—	70½	35
Lee	8	8	9	7
Miller	32	34	36⅞	32
do pfd.	98	100¾	104	100
Mohawk	—	—	25	15
do pfd.	—	—	65	65
Seiberling	27	26	29	21⅜
do pfd.	99	100½	100½	96
Star	—	—	2	2
U. S. Rubber	45	38	67⅛	38
do pfd.	92	87	111¼	87
U. S. Rubber Reclaiming	—	—	18	18
do pfd.	—	—	87	87

ONE DAY RECORD TIRE OUTPUT BY GOODYEAR

The plant of the Goodyear Tire & Rubber Co., in Akron established a new one-day production record recently when 52,000 tires were turned out by the plant. This production, combined with that of the California and Canadian plants of the Goodyear company brought the grand total of production on that day up to 65,000 tires.

For several weeks the combined output of the Goodyear plants in Canada and in this country has been maintained at nearly 65,000 tires daily, according to officials of the company. It was also said that no curtailment of manufacturing activities was yet in sight.

U. S. RUBBER STOCKS SHOW SLIGHT RECOVERY

There have been no unusual or startling movements in rubber stocks on the Stock Exchange during the past two weeks. U. S. Rubber common which was trading at 40½ in the middle of June began to better its position with the beginning of July, and was selling at 44 on July 2. This company's preferred stock, after suffering a decline on June 27 when it reached 88, began to recover also with the first of July and was selling at 94 on the 2nd. Firestone Tire & Rubber reached a new high on its common stock June 20 when it traded at 140.

In the bond market, a heavy turnover occurred June 30 on Goodyear 5s, but the steadiness of the price at 97 indicated that the syndicate was continuing its support. Nearly 450 of the Goodyear bonds were traded. On this same day U. S. Rubber 5s were a little heavy at 88, but on July 2 they rallied a point to 89. On July 2 Goodyear 5s broke badly following the dissolution of the offering syndicate, and transactions took place as low as 92⅛.

Charter Rubber Company

The Block Manufacturing Co., New York City, was chartered at Albany, N. Y., on June 30 with $10,000 capital stock to manufacture drug sundries, rubber goods, etc. Morris Block, 30 West 181st St., Olga Block, 247 Wadsworth Ave., Leonora Wolfson, 277 Broadway, New York city, are directors and subscribers.

The Gutta Percha & Rubber Manufacturing Co., New York city, filed a certificate in the office of secretary of state, Albany, N. Y., on June 30 changing the par value of its capital stock, consisting of 10,000 shares of $100 par value, to 10,000 shares of no par value.

Closing Prices on Rubber Exchange of New York, Inc.

JUNE 18 TO JULY 2

	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	SALES*
June 18	34.90	35.10	35.10	35.40	35.50	35.70	35.70	36.00	36.30	36.30	36.40	36.50	180
20	34.60	34.70	34.90	35.20	35.20	35.40	35.50	35.70	35.70	35.80	36.00	36.20	998
21	35.20	35.40	35.50	35.80	36.00	36.10	36.20	36.50	36.60	36.70	36.80	36.90	569
22	36.30	36.30	36.40	36.70	36.80	36.90	37.00	37.00	37.10	37.10	37.30	37.50	843
23	36.50	36.50	36.70	36.80	36.80	37.00	37.10	37.20	37.30	37.40	37.50	37.60	895
24	——	36.50	36.70	36.70	36.80	36.80	36.90	37.00	37.10	37.20	37.30	37.40	480
25	——	36.70	36.70	36.90	37.10	37.20	37.30	37.30	37.40	37.40	37.50	37.60	112
27	——	36.50	36.60	36.70	36.70	36.80	37.00	37.10	37.20	37.40	37.50	37.60	336
28	——	35.50	35.70	35.50	35.60	35.80	36.10	36.30	36.40	36.50	36.60	36.70	701
29	——	35.50	35.50	35.60	35.60	35.80	35.90	36.00	36.10	36.20	36.30	36.60	661
30	——	35.40	35.40	35.40	35.40	35.50	35.60	35.70	35.80	36.00	36.10	36.10	363
July 1		35.10	35.10	35.20	35.40	35.50	35.60	35.70	35.70	35.80	35.90	36.00	155
2					(Exchange Closed, Saturday, July 2.)								

(*) In lots of 2½ tons each; totals are for old and new contracts.
(Prices are for new contracts)

SELLS LARGE INTEREST IN ELASTIC WEB PLANT

Clifford A. Richmond, treasurer and general manager of the George S. Colton Elastic Web Co., of Easthampton, Mass., and a large holder of the company's securities, recently announced that he and his associates had sold the greater portion of their holdings to J. Murray Walker of Boston, owner of elastic mills in the eastern section of Massachusetts. Mr. Richmond stated that the purchase of his holdings by Mr. Walker was a step in the consolidation of a number of mills. It is thought that two of the plants to be included in the proposed merger are the Glendale Elastic Fabric Manufacturing Co., and the Easthampton Rubber Thread Co.

Mr. Richmond purchased the Colton mill from George S. Colton eleven years ago.

Rubber Service Earnings

Earnings of the Rubber Service Laboratories of Akron, in the first five months of the present year were reported to be at the rate of $6.40 a share on 36,980 shares of common stock, or nearly three times the dividend rate. On July 1 the company redeemed $35,000 8% preferred stock, which will leave only the common stock outstanding. The company's stock has been listed on the Cleveland exchange.

GOODYEAR EARNS ABOVE SIX DOLLARS A SHARE

Earnings of the Goodyear Tire & Rubber Co., and subsidiaries, in the first six months of the current year will be well in excess of $6 a share on the 830,734 shares of no par common stock, after allowing for only six month's requirements of the preferred stocks, according to an analysis appearing in the Wall Street Journal in advance of the company's semi-annual statement. In the first six months of 1926 actual earnings, on this basis, were equal to $1.43 a common share. In the first five months of 1927 net income of approximately $6,800,000 was available for preferred dividend requirements after all taxes and charges, compared with a net income of about $3,400,000 in the corresponding period of 1926, an increase of 100%.

The company's outlook is favorable, with production breaking all records. Inventory position is normal, and those close to the company state that recent fluctuations in the price of crude rubber will not seriously affect earnings. It is said that the company has not lost any money on crude rubber adjustments this year. Goodyear's Australian plant will be put into operation about November 1, when it is expected that production there will be nearly 1,000 tires a day.

Wins Safety Prize

Joseph T. Bouchard, a clerk in the plant of the Hartford Rubber Co., a subsidiary of the U. S. Rubber Co., received third prize in a safety contest recently conducted in the plants of the U. S. Rubber Co., by the National Safety Council. First prize was awarded to the Cambridge Rubber Co., and second to an employee of the Chelsea, Mass., plant.

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AKRON RECLAIMING HAS NET GAIN OF $84,000

In the first five months of 1927 the sales of the Akron Rubber Reclaiming Co., totaled $638,803, representing an increase of 55% in volume over the corresponding period in 1926. The net profit in 1927 was $83,972.25, according to B. O. Etling, president of the company. At a recent meeting of the directors payment of the regular quarterly $2 preferred stock dividend was ordered. The directors also declared a dividend of 50 cents a share on the common stock of the company, payable July 15 to stockholders of record July 5.

The directors authorized the purchase of additional equipment in order to care for the rapidly increasing business. This new equipment, it was said, will enable the company to increase its output to about 30 tons of reclaimed rubber per day. It was announced that the company's sales quota for the current year was set at $1,500,000.

GODFREY CABOT TO BUY GAS FROM SKELLY OIL

Godfrey L. Cabot, Inc., of Boston, large manufacturers of carbon black, have agreed to buy from the Skelly Oil Co., of Skelly, Texas, a minimum of $1,500,000 of waste gas during the first ten years of the contract just entered into between the two companies. Through this agreement the Skelly Oil Co., provides a market for its waste gas in the Texas Panhandle.

Work on the plant to be built by Godfrey L. Cabot, Inc., near the town of Skelly, in Carson County, Texas, has been started. It will be one of the largest in the world and of a new type of construction, developed by the Cabot engineers in a small experimental plant at Eliasville, Texas.

Stedman Pays Dividend

The board of directors of the Stedman Products Co., of South Braintree, Mass., has declared the 25th consecutive quarterly dividend of $1.75 per share on the preferred stock of the company, payable July 1 to stockholders of record at the close of business June 24.

Seiberling Sales Increase

Unit sales of the Seiberling Rubber Co., of Akron, for the first five months of 1927 show an increase of 34½% over the corresponding period of 1926. Total domestic dealer sales show an increase of 57% for the same period. The company's total sales amounted to 268,717 tires, and the number of tubes manufactured was about 10% in excess of this figure. In addition, the Seiberling company is manufacturing 25,000 pairs of rubber heels daily.

Thermoid Suit Dismissed

The suit of Wright & Corson of Bridgeport, Conn., and Philadelphia, against the Thermoid Rubber Co., of Trenton, N. J., for alleged infringement of patents on automobile brake lining machines, heard in Federal court in Trenton, has been dismissed. The court found no infringement as claimed.

Climax Rubber Process

The Climax Rubber Co., of Columbus, O., is manufacturing a product trademarked "Durowear," made from gum rubber by a new process, which the company claims increases both the durability and the tensile strength of the product. "Durowear" is being used in the manufacture of aprons, bathing wear, play balls, etc. A feature of this new product, according to the company, is the fact that it is reversible, with a different color on each side. Bathing coats, scarfs and capes are made in this reversible material. The company previously manufactured merchandise called "Presto," and the new line will be called "Presto Durowear."

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New Equipment for Rubber Factories

NEW SEMI-AUTOMATIC MOLDING PRESS

The Watson-Stillman Co., N. Y., have recently introduced a new semi-automatic molding press in which are incorporated independent hydraulic ejectors for removing the molded articles. The illustration shows the general appearance of the press, the ejectors not being discernable. The manufacturers state that this press has been designed to eliminate recurring mold costs by incorporating several features in its construction which ordinarily have to be incorporated in each mold, thus making it more adaptable to all classes of molds. The following operating and mechanical advantages are claimed for this press:

1. Hydraulically actuated ejectors, top and bottom. These are operated independently of the main ram and allow the operator to eject molded pieces at any position of the main ram, thereby saving time.
2. Hydraulic reseating of ejector pins and hydraulic operation of ejectors as positive and dependable, which is not the case with spring weighted ejectors.
3. The ejection stroke available for the top dies is from 0 to 3″ on smaller sizes and 0 to 4″ on the larger sizes of presses. This can be increased if desired.
4. The ejection stroke of the bottom dies is equal to the stroke of the main ram. This long stroke makes it possible to mold deep pieces and eject them without sacrificing any of the press opening.
5. The elimination of top ejector tension rods passing through the top head and bottom platen increases the space available for dies.
6. The bolsters, top head, moving platen and holding down gibs are slotted to allow for varying widths of molds.

Watson-Stillman Press

The press is manufactured in various sizes from 58 to 264 ton capacity with platen sizes of 23¼ x 16½ inches to 40 x 27 inches and opening between platens of 25 to 34 inches.

STARTS MANUFACTURE OF RUBBER MACHINERY

The Erie Foundry Co., of Erie, Pa., manufacturers of forge shop equipment and sheet mill machinery, have recently decided to build a complete line of rubber mill machinery in order to diversify their products. This newly started rubber machinery division is managed by J. A. Himrod, with W. H. Shave as chief engineer. Both of these men held similar positions with the Allen Machine Co., which has been dissolved.

The Erie company is planning to build a complete line of tubers, strainers, hydraulic presses, refiners, washers, mills and calenders.

With Firestone 20 Years

John J. Shea, treasurer of the Firestone Tire & Rubber Co., of Akron, finished 20 years' service with the company on June 28. Mr. Shea began as an adding machine operator, subsequently climbing up to clerk, auditor, office manager, and finally treasurer.

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The C. P. HALL COMPANY
118 Central Savings & Trust Bldg. AKRON, OHIO

New Tire Repair Manual

The Battelle Publishing Company of Los Angeles has recently announced a new sales and merchandising manual for the tire and vulcanizing trade. Trade development, shop layouts, employment problems, display and show-case treatment, are discussed, among other subjects, in its twenty-seven chapters. The experience of many successful vulcanizers is described.

Take Over Rubber Firms

Attorneys of Columbiana, O., and East Palestine, O., were recently appointed receivers to take charge of the affairs of the East Palestine Rubber Co., and the Pioneer Rubber Co., both of East Palestine. The common pleas court of Lisbon, O., which appointed the receivers, required a $6,000 bond from each of the attorneys.

Leave Combination Rubber

A. R. Colvin and F. W. Servis formerly superintendent and sales manager, respectively, of the Combination Rubber Co., of Trenton, N. J., have resigned and organized a new company in Rahway, N. J., to be known as Colvin, Servis, Inc. The new organization, it is said, will make and sell tires and tubes and repair materials.

COOPER CORPORATION TEN YEARS IN FINDLAY

The tenth anniversary of the establishment of the Cooper Corporation in Findlay, O., was recently celebrated by a program of professional entertainers and dancing in which all of the employees of the company took part. John F. Schaefer, vice-president and general manager of the company, addressed the gathering, telling of the growth of the rubber industry locally.

He recalled that the first rubber factories were established in Findlay in 1917. At that time 30 men were brought from Akron and 30 more men were recruited from Findlay to start business. From this small beginning the rubber industry in Findlay has grown until there are now three rubber plants in that locality, employing more than 750 men. The three factories are the Cooper Corporation, the Giant Tire & Rubber Co., and the Central Rubber Reclaiming Co.

National India Stops

The National India Rubber Co., of Bristol, R. I., a subsidiary of U. S. Rubber Co., announced its annual shut-down on July 1. The plant, it was said, will reopen on August 1, but with a curtailment of production.

Rubber-Coated Exhauster

The Buffalo Forge Company, Buffalo, N. Y., is marketing a rubber-coated exhauster fan for use in plants handling corrosive fumes or materials. Such plants have been required to renew their fans every few weeks or months in the past but it is believed that the rubber coating has solved the problem.

The entire wheel, shaft and inside of the housing of the new Buffalo exhauster fan is covered with a soft rubber coating applied by the "Vulcalock" process of the B. F. Goodrich Company. Every part of the fan coming in contact with fumes or material is thus covered.

Chicago Rubber Builds

The Chicago Rubber Clothing Co., of Racine, Wis., is increasing the floor space in two of its buildings. The structure housing the spreader proofing department is being enlarged 80 x 60 feet, and the building containing the calendered proofing department is being increased 60 x 40 feet.

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We have on hand for immediate disposal at a very low price, a 3-Roll Calender, manufactured by Butterworth, roll size 18 x 72″, also Watson-Stillman Hydraulic Presses, size of plates 25″ x 36″ and 19″ x 35″. Write to-day if interested.

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The Point of View

IT IS SOMETIMES said that statistics can be made to mean anything at all if the one examining them looks assiduously enough for substantiation of what has become his point of view. That this is at least occasionally true was illustrated recently following the publication of a set of figures by a Dutch economist. The profits of rubber plantation companies in Java and Sumatra were analyzed and a tabulation was prepared which showed the net profit as per cent of capital. The figures were as follows: 1920, 1.2% loss; 1921, 9.1% loss; 1922, 2.6% profit; 1923, 9.3% profit; 1924, 10.3% profit; and 1925, 21.6% profit.

Our contemporary, the *India Rubber Journal*, of London commented on these figures as follows:

"The effects of the British rubber restriction policy are clearly marked in this tabulation, not the least interesting part of which is the heavy loss sustained by the Dutch companies in the year preceding the inauguration of the Stevenson Scheme."

Being likewise interested in the price of rubber and attempts to control it, E. G. Holt, Chief of the Rubber Division of the U. S. Department of Commerce, supplements the observations of the trade publication with the following:

"Of at least equal significance are the profits earned by these Dutch companies in 1923 and 1924, years during which the average market price for rubber was under 30 cents per pound. Well managed plantations averaged 9.8% profit at that price. Even during 1922, when market prices were at the lowest point in history, these companies reported some profits".

It cannot be questioned that restriction has had its effect on Dutch profits but Mr. Holt's point concerning what may be earned with rubber selling at less than 30 cents appears to be well taken. Such tabulations as the one referred to are apt to convince Americans that the original pivotal price of 30 cents was both ample and fair while the present pivot of 42 cents is unfair and probably intenable.

High Pressure Selling

THERE HAS been much talk and analysis recently of high pressure selling methods and what they accomplish for the companies which adopt them. It being the job of the sales and advertising departments to increase the turnover, they undertake every legitimate method to do so, sometimes going to extremes. A favorite method in many lines is to convince prospects that the goods they are using are outmoded even though they may have been only recently purchased and still have in them almost all of the service which the manufacturer put there. The new article, the sales department broadcasts, has advantages which were not possible in the one it seeks to supercede. In an effort to make such an argument appear valid, a ficticious value is frequently placed on commonplace properties.

In certain cases such high pressure selling takes a vicious turn, and where competition will permit it, adulteration is restored to or the serviceable life of products is otherwise shortened in order to bring the purchaser back into the market. One analyst pointed out that the automobile tire industry was an excellent example of an industry which has decreased its sales through a great improvement in the quality and serviceability of its goods. He hoped that high pressure selling of the kind just referred to would not creep into the tire field. The tire men know that he need not worry; competition, if nothing else, will keep the manufacturers delivering the utmost in service for every dollar spent for tires.

But while the tire industry has not resorted to high pressure selling insofar as quality is concerned, it is probably true that at times ficticious values have been placed on properties which are commonplace or near it. Minor changes in process, fabric, tread or elsewhere have sometimes been magnified to a questionable extent. There are just so many tires to be used and today they are practically all good tires, no matter what may be said of their special points. At least, the consumer stands little chance of losing.

The Industrial Census

AS INDICATED elsewhere in this issue, the Bureau of the Census has published its final figures on the operations of the rubber industry in 1925.

The wholesale value of the rubber products turned out in 1925 was $1,255,414,112. This was a considerable increase over 1923, in which year the last preceeding industrial census was taken. Then the total wholesale value was $958,517,634. The nearest approach to the impressive record of 1925 was in 1919, during the post-war boom, when the value was $1,138,216,019.

The complete report of the census of the rubber industry covers 20 pages so that its full value can be obtained only through a close inspection of it. Along with examining the present report comes the question of revisions in the information to be sought in future census years. The next industrial census will be taken next year to cover 1927 and the questionnaires will be prepared within the next few months. The Bureau of the Census attempts to make its compilations of the greatest value to the industries they cover. Many industries have found it possible to revise the questionnaires to make them produce more logical or detailed information. That might be done in the case of the rubber industry. For instance, separate figures on such important items as belting and hose might be worth asking for, but now is the time to ask.

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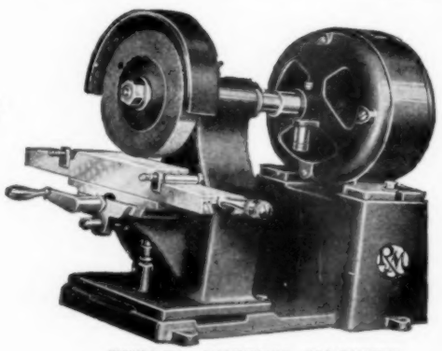

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Shall We Manufacture More Tires In The South?

Many Advantages, in Addition to an Expanding Market May Attract New Tire Factories to the Southern States

By Herbert Bruncken

WHAT, EXACTLY, is the case for increased tire manufacturing in the South, or more precisely, in the southeastern section of the United States, an area roughly comprising the states of Mississippi, Alabama, Georgia, Florida, Tennessee, North and South Carolina? What can these states offer in the way of economic advantages to the rubber manufacturer who is reviewing the most favorable locations throughout the country for the establishment of a new or a branch factory? In other words, does the South, with its climate, its labor, and its natural resources, present any inducements to the rubber industry which are not enjoyed by the North?

Sentiment in the North in regard to industrial opportunities in the South has not until quite recently, been very favorable. Even today one commonly hears the remark that if it weren't for the negro and the climate the South would be as good as any other section of the country in which to do business. It is this kind of prejudice, which is very often born of ignorance, that the South has had to contend with in an effort to rehabilitate itself from a war that was fought over 60 years ago. That the South, as we know it today, is rapidly drawing into its fold many of the largest industries in the country is beyond denial, and many of the larger southern cities are making every effort through their chambers of commerce to advertise the wealth of southern resources.

Among these cities Atlanta, Georgia, is a notable example, and for purposes of illustration, it may be well to take this city as an example of what the modern southern city and its environs offer to the tire manufacturer. From a standpoint of industrial facilities, Atlanta is perhaps a more favorable location in which to establish a rubber factory than some of the other cities of the South. However, what the state of Georgia can offer to the tire manufacturer is a pretty fair indication of what can be expected from the other southeastern states. There are six factors which may be considered, namely, climatic conditions, proximity of raw materials, labor, power, facilities for distribution and markets.

Effect of Temperature on Business

Excessively hot weather is not a stimulant to business nor can the modern factory operate most successfully in a climate where high temperatures are prevalent. Although one may associate with the South the prevalence of hot weather, as a matter of fact excessive heat over any long periods is an exception rather than the rule. Georgia, for example, enjoys an average temperature throughout the year of approximately 70 degrees, while the average temperature of Atlanta is 61 degrees. It must also be remembered that throughout the winter weather conditions are generally moderate in comparison to the severe winter weather encountered in the northern states during at least a three months period. Therefore, from a point of view of favorable weather, it would seem that the South has a distinct advantage.

In general, rubber manufacture does not demand any particular climatic conditions, as is shown by the scattering of tire factories throughout the North. Excessive humidity can interfere with rubber curing processes and has been said to be partly responsible for the troubles of certain plants. Akron's elevation of 1300 feet, at the headwaters of three rivers, is said to assure its factories an abundant water supply without air moisture which is harmful to rubber curing. Atlanta, to take the same southern city as a further example, has an altitude of over 1,000 feet and an adequate natural water supply. It might, accordingly, be expected to duplicate the condition which has played at least a small part in Akron's growth.

Cost of Materials in South

The raw materials needed in the tire industry can be obtained in the South at a cost which does not exceed or is below the delivered cost in other sections of the country. This holds true both for crude rubber and fabrics as well as the minor requirements.

In the case of Atlanta, there are fifteen main railroad lines running in all directions. The port of Savannah is within about 10 hours distance. Charleston, Mobile and New Orleans would be other favorable ports of entry for crude rubber intended for southern tire factories. Delivery would be as prompt and as cheap, or more so, than in northern Ohio or other parts of the Lakes region.

With regard to the accessibility of tire fabric, it is a matter of common knowledge that the last few years have seen a migraton of many of the New England fabric mills to the South. Only recently the Goodyear Tire & Rubber Co., purchased a mill for the manufacture of tire fabrics at Cedartown, Ga. This mill, known as the Clearwater mill, was purchased exactly a year ago and was enlarged to twice its original size, and has a capacity of approximately 40,000,000 pounds of tire fabric a year. The B. F. Goodrich Co., also has a fabric mill at Thomasville, Ga., known as the Martha Mill. Both of these companies have, apparently, found it advantageous to hold their own mills in the South.

Other tire manufacturers have followed the lead of Goodyear and Goodrich while several fabric manufacturers have shifted from Massachusetts and other New England states to the South. This tendency has been so pronounced that it is estimated that by 1928 no less than 60% of the tire fabric production of the country will be in Georgia alone. Having such a supply of fabrics right at their doors is a convenience and economy that tire manufacturers will probably appreciate.

Other raw materials needed in the rubber industry and coming from the South are the white clays of Georgia which are used as fillers, and carbon black which is produced in Louisiana, and pine tar which is manufactured in New Orleans. Louisiana is today the leading state in the Union producing carbon black.

The exodus of tire fabric mills from the North to the South bespeaks certain industrial advantages for such concerns that apply also to the tire factory or other industrial plant that looks in that direction. Of course, one reason behind the movement of the tire fabric mills was the nearness of the supply of raw cotton but there were other, and more important factors, which may apply to tire manufacturing also. The principal one of these is labor.

Labor Costs Less in South

In the first place, the cost of labor is appreciably less in the South than in the North. While it is impossible to make direct comparisons for the tire industry, on account of the small extent to which the industry is represented, it may be said that in other lines the difference is striking. In Georgia common labor receives 20 to 40 cents per hour. Skilled labor in the textile trades receives from a fifth to a third less than in New England. In addition to the lower cost of labor, the labor laws of the South are less stringent than in many northern states. Working hours are generally longer and the employment of female and child labor is more general and less regulated Southern industry is run generally on an open shop basis.

These labor advantages must not, however, be accepted without careful consideration. It is a fact that the negro represents a very large percentage of southern labor. It is pointed out by the Atlanta Chamber of Commerce that labor in the industrial area of that city is more than 97% American-born and the whites are largely of Anglo-Saxon origin. This is a rather confusing statement, because of course the negroes are American-born, and the white labor of the South is distinctly in the minority and often regarded as inferior to northern labor. Manifestly, the white man who works side by side with the negro in the South where racial and social feeling is strong, is apt to be less than a 100% workman. It is probable that the so-called foreign white laborer in the North is, on the whole, somewhat more efficient. But while the quality of Southern labor may not be so high, the manufacturer will not be confronted with such high labor costs, and the stringent labor laws for men, women and children in the North.

As a result of easily obtainable building materials, construction costs in the general neighborhood of Atlanta are from 25 to 35% lower than in the East and West. Building bricks sell for about $11 to $14 per thousand; cement at $3 per barrel; crushed stone at $1.25 to $1.65 per ton; lumber at $24 to $60 per thousand feet. Fuel oil, delivered through Georgia points, sells at 6½ to 7¼ cents per gallon, and coal at $3.50 to $4.50 per ton. Freight on raw materials are low, and freight rates to the southern markets are approximately 40% lower than those from the present rubber manufacturing centers. It can therefore be seen that using these figures as a basis for estimates, the tire manufacturer may start business in this section with less capital.

Cheap and adequate hydro-electric power is one of the features of the section about Atlanta that makes this especially desirable for the establishment of an industry. Power stations in this section are said to be capable of an average annual output exceeding 500,000,000 kilowatt hours. Atlanta itself is the terminal point for nine long distance, high-tension, electrical transmission lines, and is the hub of the southeastern power system.

The proximity of the Birmingham coal mines in Alabama is another source of economy to the prospective manufacturer. These mines are worked by non-union labor, and are, therefore, free from all strike troubles. This means that the coal supply into Atlanta, or the adjacent communities, is continuous and dependable. The cost of the coal at the mines varies from $1.30 to $2.25 per ton, while the present freight rate from the Birmingham mines and from others at approximately the same distance from Atlanta is $1.97 per ton, so that the total cost of coal in carload lots on the side track ranges from $3.30 to $4.30 per ton. In general the run-of-mine steam coal with a heat content of 14,000 B.T.U., or more, will cost from $3.82 to $3.87 per ton in carload lots, under substantial tonnage contracts of from 1,000 tons per month and upward.

To illustrate the fertile field for tire replacement business in seven of the southeastern states, the total number of automobiles registered in these states at the end of 1926 was to 1,956,005 cars. Assuming that the average automobile requires the replacement of two tires per year, 3,912,000 tires would approximately represent the yearly replacement business in this section of the South. Moreover, the southeastern states in 1926 led all states in the increase in automobile registrations, indicating that this section is just beginning to buy automobiles on a par with the North. Florida, for example, topped the list in 1926 with a 40.2% increase over 1925, and Mississippi increased 16.3%, Alabama 16.1% and Georgia 12.3%. Comparing these increases with New York, which was 11.7% or Massachusetts which was only 6.8%, one can obtain some idea of the future possibilities of the southern market.

Good Roads Increasing in Southern States

Again, the highways of the South are only beginning to be surfaced, but with Federal aid, which for seven of the southeastern states in 1926 amounted to $19,798,157, road building is rapidly going forward. Out of a total road mileage of 189,696 miles in the states of Florida, Georgia and Alabama, only 42,114 miles of roads have been surfaced. It is safe to assume that as these roads are surfaced by the states themselves and with Federal aid, the markets for motor cars, and for tires will jump considerably. And the south today is awake to the supreme importance of good roads as a means for business prosperity. Alabama in 1926 authorized the issue of $25,000,000 highway bonds.

Today the important and constantly increasing tire business of the South is being secured principally by northern manufacturers through their regular national distribution. Sales branches are located in the principal cities and large warehouses have been established at some points. For instance, Goodrich has recently built a large warehouse at Jacksonville, Fla., and Goodyear has completed a still larger one at New Orleans. Local manufacturers are yet neither numerous nor large. Some of them, however, are becoming well-known. Among them are the McClaren Rubber Co., Charlotte, N. C., the Carolina Rubber Company, Salisbury, N. C., the Hanes Rubber Company, Winston-Salem, N. C., and the Southern Tire and Rubber Company, Augusta, Ga.

The Manufacture of Erasers

Eradicating the World's Mistakes Calls for About Eight Tons of Erasers per Day—How They Are Made

THE MANUFACTURE of erasers and pencil tips is quite a steady business. There is practically no slack period. In this respect it is similar to the manufacture of rubber heels, bands and one or two other non-seasonable items. Pencils, pens and typewriters are used to about the same extent in all seasons, and the users are all the time wearing out or losing erasers as factory output of approximately eight tons per day of these indispensibles will testify.

Rubber got its name from its first, and for a long time its only, use which was rubbing out pencil and ink marks. It is hardly necessary to point out that the "rubber" of today is not pure gum as were the first specimens. On the contrary, old rubber now enters largely into eraser compositions, and one of the early erasers would compound into a half-dozen of the present day erasers of the same size.

Erasive stocks are of two distinct kinds, soft and pliable for removing pencil marks, and fairly hard and rough for scraping out ink marks. A pencil eraser must be soft and crumbly enough to wear away slightly each time it is used. In that way the surface is always renewing and is constantly in the best condition for effective work. Pencil tips are turned out a little harder than individual erasers so that they can resist cutting and finally breaking off at the edge of the metal sleeve. Plugs for the cheapest grade of pencils are about the same quality as tips but knobs or caps are of better stock as they have to be molded.

Little Crude Rubber in Erasers

A very small percentage of new rubber goes into pencil compounds. Since the bulk of lead erasers are of reddish shades, the base of the pencil compounds is red tube reclaim and other reclaimed waste of the same color. Reclaimed rubber, a little fine pumice or whiting and a small amount of coloring matter and substitute makes up the batch. Substitute is used to increase pliability and also to cause a slight tackiness. It is safer to use substitute for this purpose than oil or grease. It may be worth mentioning that sub alone, pressed into blocks and then cut into cubes, is used for delicate erasing. It is sometimes known as "soap" eraser or, because of its use by artists, as artists' gum.

Green, and also white, erasers are made to some extent but reclaimed rubber is not used so commonly in them since white or green reclaims are not as adaptable as red; therefore new rubber and substitute is used in larger proportions to make up for the absence of reclaimed.

Since in ink erasing the surface of the paper must be scraped off, in stocks of this kind a considerable amount of medium and coarse pumice is used along with the rubber, sub and whiting. The rubber is about 1 to 2¼ of the other ingredients in ink formulas. Ink erasers need to be much harder than pencil erasers and are compounded and cured so as to obtain this effect. Mixing is done in the same manner as for all low rubber content stocks. If the mills are slow it is done on the front roll; if rather speedy, the back roll takes the batch. When the batch is finished it is scraped off and sheeted out cold.

There are three ways of getting stock into shape for tips and flat erasers. For the former round cord ranging from 190/1000 to 410/1000″ in diameter is run on the tubing machine. Sheets for the flat erasers are calendered but not more than ⅛″ thick on account of porosity. Since the material is too dry for calender plying, the thin sheets are cut into lengths, laid out on zinc tables and cemented and plyed by hand. Another way to make the slabs and still avoid hand plying is to cold press the mixed stock in large cast iron frames, thus producing rectangular blocks. These are sliced into slabs of the desired thickness; the blocks may be from 250 to 300 pounds in weight, according to the size of the press available, say, 48″ x 18″ x 12″ in size. This method is of course much slower than calendering and hand plying.

With the exception of thin slabs for round or octagonal erasers, the eraser stock is all cured before it is cut into pieces which constitute the finished goods. To avoid waste, the slabs must be measured and trimmed, before they are cured, to a size that will exactly produce a certain number of erasers of the desired dimensions. Pencil cord is cut into short lengths and laid straight in pans of soapstone; it is not chopped until after it has been cured. Thin sheets (single ply) for circular and octagonal disc erasers are punched with multiple dies while *unvulcanized* to obviate a cured scrap loss that would amount to around 30 per cent.

Vulcanizing Conditions

Curing is in open steam heat or compressed air and at rather low temperatures since the stock is weak and easily blistered. Cures range from ¾ to 1¼ hours. The heater carriage is fitted with a rack to support shelves some 4″ or 5″ apart and these are curved somewhat to turn off condensation which would otherwise settle on the slabs of stock. If the slabs are of ¼″ thickness or thereabouts, they may be laid double on the curing shelves so that a medium sized vulcanizer will cure 600 to 700 pounds at a charge.

The next step is cutting the slabs into bevel or square edge strips. These are chopped into sections, each one of which is an eraser. The length of the eraser is determined by the width of the strip. The strips are placed in rows on the bed of a machine that can quickly be set to cut automatically any desired width.

Tumbling is the final process and it rounds off the edges and improves the surface generally as eraser stock is more or less discolored by steam when curing. The tumbling is done in barrels large enough to hold 250

[*Continued on Page* 354]

The Value of Performance Tests for Rubber Goods

Abrasion, Flexing and Aging Tests Show the Manufacturer How His Goods Will Behave in Service and Point the Way to Better Quality

(The following is part of a paper by J. M. Bierer and C. C. Davis of the Boston Woven Hose and Rubber Company entitled "Specifications for Rubber Goods and the Value of Performance Tests." It was read by Mr. Bierer before a meeting of the Institution of the Rubber Industry in London in May. Since space did not permit the reproduction of the complete article in one issue, the section criticising the way in which specifications are generally used in purchasing rubber goods was published in the June 25 issue of THE RUBBER AGE *and the author's review of performance test methods, equipment and results appears herewith.)*

WITH THE tremendous growth of the rubber industry, it has become of increasing importance to the manufacturer to foresee the behavior of his products in service and to develop tests which duplicate this behavior in a relatively brief time and in a reliable manner. In goods like tires which fail through wear the manufacturer has seen the need of abrasion tests, in goods like bathing caps, which are exposed to sunlight, he has appreciated the need of light tests, and in all rubber goods he has realized the value of aging tests. In general, there has arisen the necessity of performance tests which foretell the behavior of each of the various types of rubber goods.

Abrasion Tests

One of the most important uses of rubber is in goods which must withstand abrasion, and so there has been considerable effort to develop tests for determining the quality of rubber in this respect.

In 1922 there appeared the first commercial abrasion machine. It was designed by the New Jersey Zinc Company and is illustrated in Fig. 1. It consists of a rough, coarse track of crushed quartz, feldspar or carborundum which moves under the samples. The track revolves 30 r.p.m. and 1,000 revolutions are sufficient for high grade compounds like tire treads. In the latest modification of this machine the drag is interrupted continually so that the samples leave the surface and then fall back on it during the continuous onward motion of the track.

An abrasion machine developed by the B. F. Goodrich Company is illustrated in Figs. 2. and 3. The samples of rubber, in ring form, revolve at a rate of 130 r.p.m. within a loose mass of carborundum in containers. The test is slower than the previous one and with tire tread compounds requires several hours.

The third machine, developed by the Akron Standard Mold Company, and shown in Fig. 4, has a freely rotating stone abrasive wheel against which the rubber, in disc form, is driven at 33 r.p.m. The stone wheel is pivoted so that its pressure on the rigidly supported rotating rubber disc may be controlled while it is being dragged and rotated by the disc. The disc may be held at any angle on the wheel and its rate of wear thus controlled. In the tests described later this angle was 15°.

The United States Rubber Company has designed a machine[1], seen in Figs. 5 and 6, in which slabs of rubber are held rigidly on a traveling table while a wheel covered with emery cloth rotates against the direction of movement of the table and is reversed in direction as the table returns. The wheel rises from contact with the sample as each passes by. The wheel and its support are freely balanced so that the pressure on the rubber samples is constant. Like the New Jersey Zinc Company machine, tests are completed within one-half hour. This machine is used extensively in testing the abrasive resistance of tire tread compounds.

Another entirely different type of machine, designed by the Boston Woven Hose & Rubber Company, to test products produced for sand blast work, is illustrated in Fig. 7. The samples of rubber are attached to a rotating disc and subjected to a sand blast. In this way each sample receives the same treatment for the same length of time. This machine is the only one yet designed which gives results conforming to the wear obtained in sand blast hose.

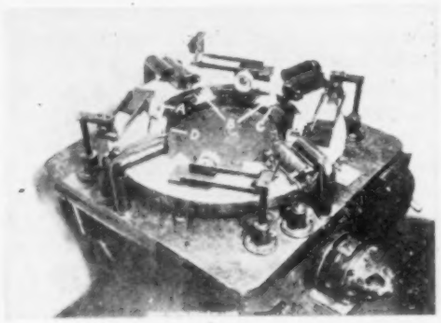
There was first described on April 14 of this year, by Williams of the Mellon institute of Pittsburgh, a new abrasion machine which is shown in Fig. 8. This machine functions as a Prony brake, where the friction surfaces are the test blocks of rubber, held against a rotating abrasive disc. Here the volume loss per unit of work expended may be measured.

The mechanism of wearing away the rubber is different on each of these machines, which suggests that relatively different results are obtained on different machines. To establish this point five compounds were tested by seven different methods of wear.

	Tire Tread	*Conveyor Belt Cover*	*Medium Grade Heel*	*Low Grade Heel*	*Sand Blast Hose*	*Blast Tube*
Smoked Sheet	60	35	12	..	80	
Alkali tire reclaim	6	25	24	24	..	
Solid tire oil reclaim	..	..	24	24	..	
Sulfur	2⅜	1½	1½	1¼	2½	
Ethylideneaniline	⅜	..	..	..	½	
Mercaptobenzothiazole	..	¼	..	..	..	
Dipenylguanidine	½	..	..	..	..	
Phenyltolylguanidine	..	..	¾	¼	..	
Stearic acid	..	¼	..	..	..	
Pine tar	¾	..	2	2	..	
Mineral rubber	..	5	8	10	..	
Zinc oxide	10	5	..	..	17	
Carbon black	20	..	..	..	..	
Whiting	..	28	28¼	38½	..	
	100	100	100	100	100	

These compounds were tested on seven abrasion machines, and the resistance to abrasion compared by converting the reciprocals of the rate of wear of each compound on each machine to a basis of 100 for the tire tread compound. In this way the higher the index of a compound shown in the following data, the better its

[1] Editor's Note: This machine is manufactured and sold by the Henry L. Scott Company, Providence, R. I. For a detailed description of it, see THE RUBBER AGE, 1926, Vol. 20, page 232.



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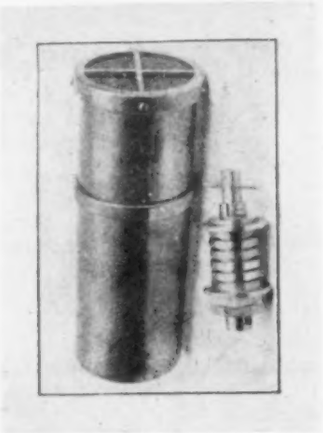

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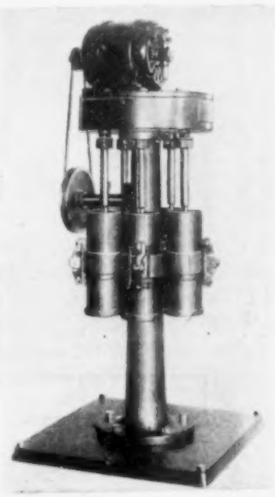

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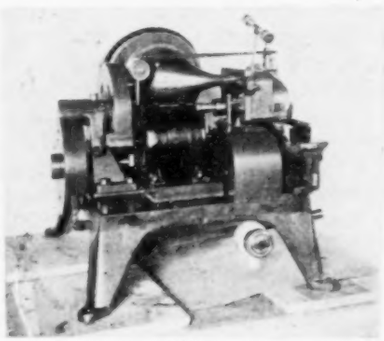

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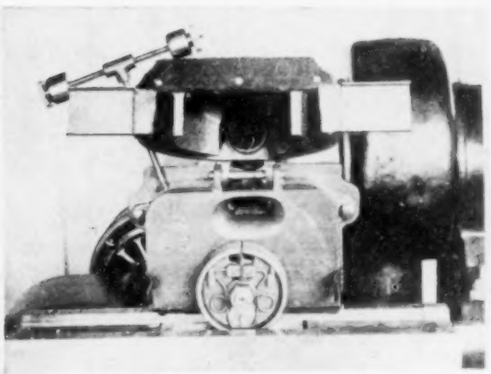

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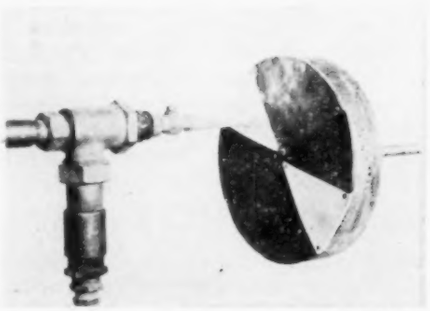

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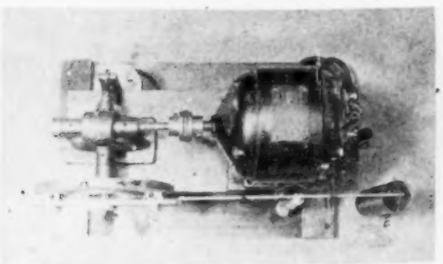

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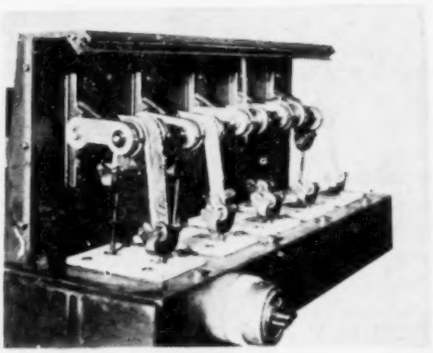

10 A

4

resistance to abrasion, an index below 100 indicating that the compound was poorer than the tire tread compound, and vice versa.

	Tread	*Conveyor Belt Cover*	*Medium Grade Heel*	*Low Grade Heel*	*Sand Hose*	*Blast Tube*
N. J. Zinc Co.						
quartz track	100	22	29	66	15	
feldspar track	100	18	12	28	13	
intermittent wear	100	26	18	11	54	
Akron Std. Mold Co.	100	35	31	27	5500	
B. F. Goodrich Co.	100	14	11	7	114	
U. S. Rubber	100	39	27	20	38	
B. W. H. & R. Co.	100	40	20	9	200	

In the Boston Woven Hose & Rubber Co. sand blast machine, a sample of steel gave a value of 7, and a piece of oak was completely destroyed long before the test was completed, showing that even the poorest rubber compound containing no new rubber is superior to steel

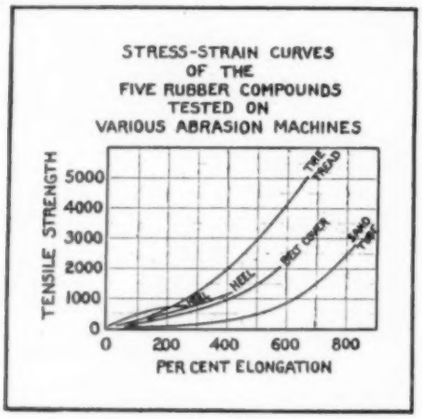

Fig. 9

Chart Showing the Stress-Strain Curves of the Five Rubber Compounds Which Were Tested on Various Abrasion Machines

in its resistance to abrasion. A rubber belt was attacked in such a way that the first two plies of cotton duck were eaten out, leaving a sponge-like skeleton of rubber friction.

The stress-strain curves of these same compounds are shown in Fig. 9.

The individual abrasion machines indicate the behavior of rubber under different conditions, and the choice of any one of these machines or of any future machine depends upon the type of abrasion which it is desired to imitate. It is unreasonable to expect that a single machine can be designed to duplicate every manner in which rubber undergoes abrasion, and it is preferable to put the utmost skill into the design of a machine which will duplicate one kind of wear, even at the sacrifice of its general utility for such a variety of uses as sand blast hose tubes and tire treads.

There are certain factors in the wear of a tire, notably its hardness, its tendency to tear and a heating effect, which play a part in abrasion, yet which are not well understood, and which therefore must be studied further before an artificial abrasion test can be designed to duplicate road wear. The heating effect plays a greater part than is often realized, for as the tire comes in contact with the road this heating effect often raises the temperature of the rubber to the softening point. This is due to both longitudinal and to transverse slipping of the tire, the transverse slipping being of course caused by flexing.

Though the machines in their present state of development are not all that is desired, they represent an important step forward, and they offer a ready means of distinguishing between a compound with high resistance to abrasion and one which wears poorly. To obtain reliable information, one must choose the particular machine which most nearly approaches in its action the actual conditions of wear.

In spite of this, consumers of rubber goods such as conveyor belts are not aiding or even encouraging their development, and are not even taking advantage of them in their present state. The automobile tire companies are more progressive and have carried out road tests on their tires even before the development of abrasion machines, so that they may now compare the performance of various compounds on the road and on abrasion machines.

Flexing Machines

The most important fabric rubber goods which are continually deformed or flexed are pneumatic tires and belting. This flexing tends to cause the plies of fabric to separate.

The test which has been relied upon to determine how a belt will withstand service of this character is the *friction test*, where either the rate of separation of two adjacent plies under a given tension, or the force required to separate them at a given rate, is measured. This friction test does not distinguish sufficiently between a good belt and a bad one; in fact, a belt having an 18-pound friction has outlasted in service another belt with a 25-pound friction. This is extremely important, for the purchaser may pay a higher price for a high friction test only to obtain a belt which does not last so long as a cheaper belt with a low friction test. Then again he may receive two belts showing the same friction test one of which greatly outwears the other. It is now generally conceded that the friction test is of little value in determining the flexing life of a belt.

A few years ago a machine was developed by the United States Rubber Company which approaches the action of a tire or a belt in service. This is shown in Figs. 10a and 10b.

Description of U. S. Rubber Abrasion Machine

It consists of small pulleys over which strips of belting held by clamps pass back and forth. The pulleys are pivoted and the counterweight determines the tension of the strips of tire or belt. Of course both this stress and the diameter of the pulleys, particularly the latter, govern the number of strokes required to separate the plies, but in any case the action is much more severe than that in a belt in service.

It is not difficult to see why the friction test gives a false indication of the life of a belt and why the flexing test more nearly approaches, even though it does not duplicate, service conditions. At each passage of the belt over the pulley, the rubber fibres uniting the fabric are stretched and partially recover only to be stretched again. The smaller the pulley the greater this stretch, and the higher the speed and the shorter the belt, the less the time for the rubber to recover before it is stretched again. Therefore the sooner the fibres reach the next pulley the less they have recovered and the higher their residual temperature. The flexing test stretches the rubber much more frequently than a service drive and so the rubber behaves differently under the two conditions. Therefore two belt compounds may last the same length of time in service, yet break down after different times on a flexing machine, due to the rapidity of the

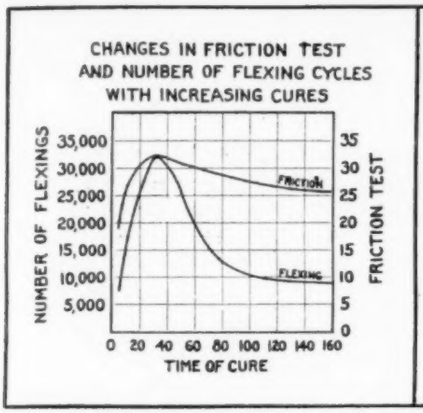

Fig. 11

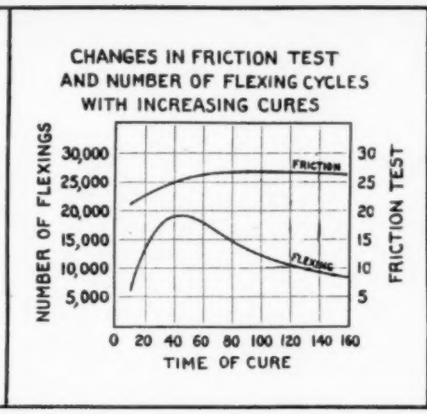

Fig. 12

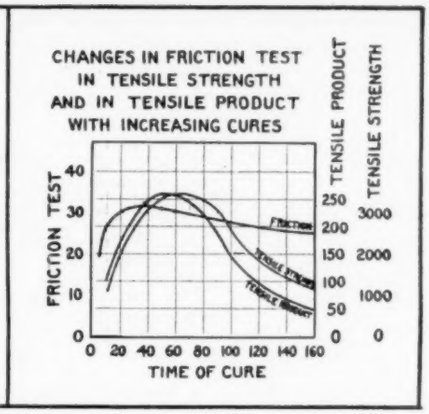

Fig. 13

hysteresis cycles. The friction test does not involve repeated stretching and hysteresis losses and so has no relation to service conditions.

The graphs presented as Figs. 11 and 12 show the changes in the flexing life and in the friction test of two different belts cured for increasing times. In neither case is the friction test nearly so sensitive to overcuring as the flexing life, and there is no relation evident between the friction test and the flexing life of a belt. The curves show clearly that two belts may have the same friction test and yet one far outlast the other in service.

Fig. 13 shows that neither the maximum flexing life of the belt nor its friction tests are proportional to the maximum tensile strength or tensile product. In this graph the tensile product values are expressed as the product of the % elongation and tensile strength in lbs. per sq. in. divided by 10,000.

However, in service the natural aging of the rubber compound may play an important part. With a tight belt or a belt which has stretched and been shortened, the rubber is under permanent tension, resulting in a rapid deterioration which always occurs when rubber remains under tension. The rubber friction compound may deteriorate so rapidly that in a few months or years it is equivalent to a much poorer compound. Therefore two belts may give the same flexing test and yet one may give out sooner than the other in service because it contains a compound which deteriorates more rapidly. In this case a flexing test should be combined with an oxygen aging test.

Flexing vs. Friction Test

The important question is not whether the flexing test duplicates exactly ordinary service conditions, but whether it is a close enough measure of the quality to warrant its adoption in place of a friction test. The friction test is of little value, whereas the flexing test gives a valuable indication of the behavior of a belt under adverse conditions, information which is of more value to the consumer than its behavior under more favorable conditions. A performance test has therefore been developed which should replace the present unsatisfactory and misleading friction test appearing in most specifications.

Service tests like abrasion and flexing tests are indispensable for goods which fail in service because of severe mechanical treatment. But there is a wide range of rubber goods which are not treated so severely and which would remain serviceable far longer than they do if it were not for the fact that they oxidize.

The physical changes which accompany this natural deterioration differ with the character of the rubber compound. In some cases the vulcanized rubber compound becomes progressively harder until it finally loses all its elasticity and becomes brittle. Other compounds first becomes softer and may even become sticky and plastic enough to flow, but in this case also they ultimately become hard, brittle and resinous.

Possibilities of Oxygen Aging Tests

It has become possible by means of the oxygen aging test[2] to duplicate these different changes, including the changes which occur in rubber cured with sulphur chloride, for tests show that bathing caps which become weak and tacky in storage behave the same way in the oxygen aging test, while better aging caps withstand oxygen correspondingly longer.

There are, however, limitations to the oxygen aging test which cannot be too strongly emphasized.

There are many types of rubber goods which are exposed only a small part of the time, or not exposed at all to light, and deteriorate chiefly because of oxidation. It is this type of natural aging which may be closely duplicated in the oxygen aging test, and only this type of aging. Some rubber goods not only undergo atmospheric oxidation but are exposed to sunlight and to heat. When rubber shoes and automobile topping are exposed to light, they deteriorate much faster and crack much sooner than when stored in darkness. Steam hose deteriorates from heating, and natural aging plays little or no part. To duplicate these conditions exactly would require a test which combines the action of light, oxygen, heat and humidity in such a manner that the relative intensities of these factors would agree with the particular conditions encountered in natural aging.

An artificial test might be devised in which the rubber is exposed simultaneously or in repeated cycles to ultraviolet light, to oxygen, to a temperature above normal and to the proper humidity so that the various conditions causing deterioration under natural conditions would be intensified to the same degree.

Investigation of various conditions and experience with a wide variety of compounds subjected to oxygen at different pressures and temperatures has shown that a pressure of oxygen of 300 pounds per sq. in. at 60°C

[*Continued on Page* 354]

[2] *Ind. Eng. Chem.* 16, 711 (1924); *India Rubber J.* 68, 537 (1924); 70, 425 (1925).

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Unused Rubber Export Coupons In Malaya and Ceylon

Regulations Governing Issuance and Use of Coupons Have Been Frequently Revised—Surplus About Exhausted at Present

By E. G. Holt

Chief, Rubber Division, U. S. Department of Commerce

(The following is the second of two papers prepared by Mr. Holt to clarify certain aspects of British rubber restriction and its operations. The first dealt with the over-assessment of standard production, and appeared in THE RUBBER AGE *of June 25th. These papers are being released through Commerce Reports, the official organ of the Bureau of Foreign and Domestic Commerce.)*

RIGHTS TO export rubber from Malaya and Ceylon restriction areas are issued in the form of permits, which are passed from seller to buyer in each transaction. These permits are issued by the restriction administrative officials and are generally spoken of in the trade as coupons.

On November 1, 1922, stocks in dealers' hands in the restriction areas of Malaya and Ceylon were licensed for export free of the export duty payable under restriction rules. The amount of stocks so licensed were: Malaya restriction area, 7,253 tons; Ceylon, 10,735 tons. As these stocks were exported they were necessarily replaced by stocks of couponed rubber, and accordingly the entire amount of rubber for which coupons are issued in a given restriction year would not be exported during that year, a part of these coupons being required to cover the stocks of rubber on hand at the end of the year. This amount of unused coupons outstanding at the end of a restriction year or at the end of a restriction quarter is described as carry-over.

Necessary Dealers' Stocks of Rubber

During each restriction year the standard production announced has been above the actual production capacity of rubber estates in the restricted areas[1]. The allowable percentage of exports for each of the first three years—61.25 for the first, 58.75 for the second, and 61.25 for the third—was so low that producers were able to use up their coupons regularly. The carry-over of unused coupons for Malaya at the end of the first restriction year, October 31, 1923, was placed officially at 6,191 tons, or less than the licensed stocks a year previously. The export of licensed stocks from Ceylon during the first restriction year was 10,360 tons, indicating that a few tons were carried over for the second year and that the entire amount was, therefore, not replaced by couponed stocks. On November 1, 1925, the carry-over of unused coupons for Malaya has been unofficially reported as 5,878 tons and for Ceylon, 4,901 tons.

During the fourth restriction year, ended October 31, 1926, the percentage of allowable exports was 96.25 per cent of the standard production. This was far above the production capacity of estates in both Malaya and Ceylon, and, as a consequence, the carry-over of coupons increased very greatly. At the end of the fourth restriction year the total carry-over of unused coupons for Malayan (exclusive of Trengganu) restriction area has been officially announced as 23,544 tons; for Ceylon, 14,928 tons. Of these amounts, 7,000 tons of rubber were held by dealers against these rights in Ceylon, and 6,315 tons were held by dealers in the Malayan restriction area (not including Singapore and Penang). These may be described as approximately the necessary dealers' stocks against which coupons must always be outstanding.

Owing to the steady increase in world stocks of rubber during 1926, and the necessity, under the restriction regulations of restricting exportation effective November 1, 1926, to 80 percent of standard production, it was realized that the availability of these unused coupons would offset the effects of restriction if they were permitted to be used. Efforts were accordingly made by producers, desirous of having restriction immediately effective, to secure cancellation of the surplus unused coupons outstanding at the beginning of the current restriction year. Cancellation of outstanding coupons was not favored by the British Government because the permit was regarded as a contract, but it was thought desirable to limit the period of validity of coupons to be issued in future. On November 5, 1926, the following official announcement was made.

> The secretary of state for the Colonies has approved of steps being taken by the Governments in Ceylon and Malaya to introduce the necessary measures to impose a limit of time of the validity of rubber export rights which may be issued in those territories on and after February 1, 1927.
>
> The intention is that, while such rights existing before that date will continue, as heretofore, to be valid for the export of rubber at any time after issue, coupons in Ceylon and export credits or licenses in Malaya which may be issued after February 1 next, shall cease to be valid on the expiration of a period of three months following the period in respect of which they are issued, viz, they will be valid for a total period of four months in Ceylon and of six months in Malaya.
>
> It is not at present intended to limit in this way the validity of coupons issued to small estate owners in Malaya in view of the comparative unimportance of the export rights thus carried over.

In Ceylon, export coupons are issued monthly; in Malaya they are issued quarterly, most of the permits being granted during the first months of each restric-

[1] See THE RUBBER AGE, June 25, 1927, page 298.

tion quarter. This explains the lack of uniformity in the duration of validity of coupons announced for the two countries. Ceylon producers objected strenuously to this difference, and a further official announcement of November 24, 1926, stated:

> With reference to the official statement published on November 5, it is officially announced that in the interests of uniformity as between Ceylon and Malaya in the matter of the period of validity of export rights issued on and after February 1, 1927, the measures contemplated by the Government of Ceylon with the approval of the secretary of state for the Colonies will make provision for such export rights in Ceylon to be valid up to the end of the quarter following the quarter in which they were issued, and further for the validity of export rights issued to small holdings to be exempted from limitation.

This concession did not satisfy Ceylon interests, since they claimed it would force them to export rubber from stocks maintained in Colombo within four or five months, depending on the date of the coupon covering such rubber, whereas in Malaya rubber could be exported to Singapore and Penang, outside the restriction area, and be held there for an unlimited period. The new regulations were made effective in the Straits Settlements and Federated Malay States on December 17, 1926, and January 27, 1927, respectively, applying only to estates of over 25 acres. Celyon continued to object to the limitation of validity of coupons, and on January 31, 1927, the British Government agreed that the decision to limit the period for exporting rubber should be abandoned as far as Ceylon is concerned, and that henceforward coupons in Ceylon should have no time limit.

Decrease in Surplus Coupons

The amount of unused coupons outstanding for Malaya on February 1, 1927, the beginning of the next restriction quarter, was 18,707 tons, and for Ceylon 12,218 tons, showing that during the previous quarter with 80 per cent of standard production allowed to be exported, surplus coupons were used: For Malaya 4,837 tons and for Ceylon 2,710 tons.

During the February—April, 1927, quarter, exports in excess of the 70 per cent standard production allowance totaled 5,116 tons for Malaya and 1,201 tons for Ceylon, and the unused coupons outstanding May 1 were: For Malaya 13,591 tons and for Ceylon 11,017 tons.

If the figure of 7,000 tons for necessary dealers' stocks be taken for both Malayan restriction area and Ceylon, it results that on May 1, surplus unused coupons were outstanding for Malaya to the amount of 6,591 tons and for Ceylon 4,017 tons. Beginning May 1, allowable exports were reduced to 60 per cent standard production, and it appears, therefore, that further utilization of the surplus coupons may follow until they are reduced to necessary working stocks.

If the officially announced figures of total standard production for Malaya were accurate, and if export permits had been granted on the basis of these announced figures, it would be impossible to explain the accumulation of unused coupons as of November 1, 1926. The indication is that the issuance of Malayan export permits has been based on figures far higher than the total announced standard production figures. Assuming that no material change in stocks has occurred in the restriction area of Malaya since restriction began—November 1, 1922—the exports during each restriction year at minimum rate of duty as specified percentages of standard production would enable one to estimate closely the total standard production for Malaya as follows:

Malayan standard production

Year ended Oct. 31—	*Exports*	*Allowable per cent*	*Indicated standard production*	*Announced standard production*
1923.....	167,211	61.25	272,977	270,000
1924.....	167,696	58.75	285,610	260,400
1925.....	182,942	61.25	298,680	276,793
1926.....	[1]295,894	96.25	307,422	294,810

[1] Plus 17,666 tons increase in carry-over of coupons.

These statistics show that the actual standard production of Malaya for past years has been higher than the announced figures, and also that Malayan producers have been overassessed more than was indicated in the first article of this series. It is dangerous to place full reliance on announced standard production figures for Malaya.

The following table for Ceylon shows that the amounts exported bear a very close relation to the announced standard production, except for the third restriction year, when some uncouponed rubber may have been exported at excess duty.

Ceylon standard production

Year ended Oct. 31—	*Exports*	*Allowable per cent*	*Indicated standard production*	*Announced standard production*
1923.....	37,846	61.25	61,789	60,034
1924.....	37,194	58.75	63,309	62,282
1925.....	44,092	61.25	71,987	65,807
1926.....	[1]66,984	96.25	69,594	70,475

[1] Plus 10,027 tons increase in carry-over of coupons.

The effect of present regulations for limiting validity of coupons to a certain period is practically nil, in so far as concerns prevention of similar accumulations in future possible periods of allowable exportation at 100 per cent standard production. Malayan producers with estates over 25 acres are alone subject to this regulation, and they are able, by always using the oldest coupons in hand, to accumulate unused coupons to the extent of allowable exports for an entire quarter before cancellation of their coupons would result.

Sharp criticism of the restriction scheme has resulted partly from the apparent inaccuracy of standard production announcements, partly because of the keen disappointment felt by bull market operators at the failure of the attempt to secure cancellation of coupons last November, and partly from the slowness of action of the scheme after prices began to decline last year. The following editorial comment from the *Malaya Tribune*, Singapore, is pertinent:

> There is an immediate need of expert consideration of this carry-over problem, of standard production, of the advisability of introducing a monthly basis for restriction, and a sliding scale of price against exportable allowance. We simply can not go on much longer with the present scheme, because it is so unwieldy, inaccurate, and slow as to be a positive drag on the industry, unless in times of exceptional poverty. Indeed, we would go so far as to say that, rather than see the continuance of this statistically false scheme, with its inability to react to circumstances and its hopelessly elongated basis of calculation—three months in the rubber market is a suicidal length of time for which to dictate arbitrary regulations—we would prefer the end of restriction altogether.

Many directors of producing companies have during the past few months taken occasion at the annual company meetings to suggest possible changes in restriction which would tend to hasten its reaction to the prevailing market prices for each month, and this may be an indication of the direction any future changes might be expected to take.

The London Letter

The GENTLEMAN FROM MINCING LANE will report current opinion in London's famous rubber market in every issue of THE RUBBER AGE

The Gentleman Says "Now For More Stability".

LONDON, 24th June, 1927.

JOBBING BACKWARDS, as we say on this side, the hectic events in the commodity market of the past week or two have shed a new light on the cause of the tranquility of the market during the January-June period. It can now be seen that probably to quite a large extent the firmness of the commodity during this time, when all the figures and tendencies should have brought about a gradual decline in price, can be attributed to speculative forward purchases—not excessive at any one time, but amounting to quite a considerable tonnage in the aggregate. This, no doubt, was as potent a factor in bolstering up the market as were the operations of the Buying Pool.

I have told you on a previous occasion that a few months back the possibility of a reduction in the exportable allowance to 60% was looked upon here as a negligible one and that, anyway, in the event of this contingency actually arising, a considerable advance in the market was regarded as assured; and there is no doubt that, upon this line of argument, considerable forward purchases have been made, mainly, I believe, for July-September and October-December delivery.

In its origin, the recent sharp slump in Mincing Lane is directly attributable to short selling from New York, but this in itself was sufficient to agitate many of the bulls on this side, and undoubtedly led the major portion of them to liquidate their paper rubber.

It is now patent that without the support of the bull element during the earlier months of the year the price of the raw stuff would gradually have dwindled, in keeping with the increasing bulk of available stocks, and recent developments can reasonably be said to have adjusted the price to approximately the basis that would have been reached had previous purchases been restricted merely to the manufacturing demands. The disconcerting factor, of course, is the dramatic rapidity with which the adjusting process has been effected.

THE RESULT of the latest transactions in the commodity has been to strengthen greatly the technical position of the market, and while the available stocks just now are adequate enough to preclude the possibility of the price running away again yet awhile, there is, to my mind, no reason for regarding these supplies as a menace. The soundest policy to adopt, in my opinion, is to steer a middle course between the views of the pessimists and of the optimists; in other words, it seems to me that, apart from periodical fluctuations brought about by temporary speculative attacks in one direction or another, the market will be more or less stabilized for some months to come at around the present level of between 1/5d and 1/6d per pound.

In arriving at this conclusion I have taken the recent statements of the British Colonial Secretary regarding the future of the Stevenson Scheme as a factor of the first importance. You have, no doubt, received cabled reports of the announcements of the 17th and 21st instants, and will agree that Mr. Amery has expressed himself in a manner which leaves no room for doubt as to the policy of the Government in this matter. As a considerable portion of the selling which recently eminated from your side was unquestionably encouraged by rumors which have now been shown to have had no foundation whatsoever, the scope for future speculative attacks of this nature has been reduced to a minimum, and the possibility of further spectacular price movements hereby diminished.

ON THE subject of London stocks it is rather interesting to note that the monthly excess of imports over exports at this port has been diminishing for some time, the May figure of under 3,000 tons representing the smallest total since the stringent period of 1925 Thus, while the total excess in 1926 was nearly 85,000 tons, or 7,000 tons per month, and the figures for the January-April period of the current year totalled up to nearly 35,000 tons—a monthly average of almost 9,000 tons—the actual surplus for May is only 2,896 tons.

As it takes some six weeks or so for shipments from the producing countries to reach the consuming centres, the full effect of the recent cut to 60% in the exportable allowance from Malaya and Ceylon and the voluntary British adherents outside these areas, has yet to exert itself, and in these circumstances further reductions in arrivals appears to be a reasonable assumption. Other things being equal, there is accordingly some ground for the belief that the tide has now turned, especially when it is considered that the statistics dealt with above do not take into account the deliveries to British manufacturers, which has so far this year been averaging approximately 4,000 tons per month.

You are, of course, aware of the constant talk about the revision of the restriction regulations. I do not believe anyone can say at the moment what direction the changes, if made, are apt to take. Those who still think that restriction will be abandoned altogether are certain to be disappointed, in my opinion.

Yours faithfully,

THE GENTLEMAN FROM MINCING LANE

Manufacture of Erasers

(*Continued from page* 345)

or so pounds and takes from two to three hours, depending on the speed of the barrel and the quality and size of the erasers in it.

After tumbling, the erasers are stored in shallow bins to sulphur and when ready for packing they are washed in a mild solution of caustic soda to brighten them. Every eraser is neatly printed with trade mark, number of stock it is made from, and size (that is, number to the pound). Printing is done by hand, or rather both hands, since to perform this operation the girl operator places the eraser with one hand and pulls over with the other a swing carriage with the type set in it.

There is hardly any standard diameter and length for pencil tips. Metal pencil requirements vary in this respect much more than wood. There are around 50 different stock sizes of individual erasers, ranging from two dozen to 20 dozen to the pound. This number includes the several shapes and colors.

Erasers are made in three general designs, as follows: flat rectangular, almost equal in length and width; a long, narrow kind that may be of equal width and thickness but which is generally twice as wide as it is thick; and lastly, the 1½ to 1⅝″ typewriter discs which are ⅛″ thick. These discs are usually furnished with a metal disc on each side, held in position by an eyelet through the center.

The flat rectangular erasers are from ⅛ to ⅜″ thick, ⅜ to 1½″ wide and 1″ to 2″ long. The long narrow ones are of the same range of thickness as the other, ⅜ to ⅝″ wide and from 1¼ to 3¾″ long. The first may also be made with the ends bias; the second always has beveled ends and often these are bias.

Besides the thin ink discs which are mostly used by typists, a stick form of ink eraser is made. Another stick form is half ink and half pencil eraser, these being generally 3 to 4″ long, ½ to ⅝″ wide, and ¼″ thick; smaller sizes are also sometimes made.

As before stated, there are some 50 kinds of erasers carried by the manufacturers but this represents only about half the detail they are up against. Special designs and special trade marks are often called for, notably for advertising different lines of goods since erasers, like blotters and calendars, have a value in this direction. In addition to stationers all over the world, exporters, department and 5 & 10c stores, public schools and large corporations often demand special sizes and branding. As with every manufactured article, new sizes, shades and shapes are frequently proposed, often by the salesman in effort to stimulate sales through offering more attractive or unusual goods.

In the erasive line there is a demand also for chunks or squares, and also wheels of different sizes, for use by concerns manufacturing various articles that have to be cleaned or burnished before shipping.

Sleeves for penholders or pencils have considerable call; they are run on tubing machines, the wall about 1/16″ thick and fine ribbed. When cured they are chopped into 1¾″ lengths. If of sponge rubber, the wall will be 3/32″ thick.

Good tight fitting boxes are used for packing erasers. Usually each box is made to carry a pound of erasers and this means that the manufacturer must carry a great number of sizes of boxes. The size number on an eraser generally indicates its number to the pound. Also, there is a material number on each eraser in addition to the brand, for example:

German-American
Red B, No. 31

The label on the end of the box will bear the same legend with the addition of the weight: 1 pound. It therefore means that the contents are made of red B stock and number 31 to pound.

Some customers prefer boxing by the dozen, the number of dozens going into a box depending on the size of the eraser. The label is then so marked and the net weight given.

Value of Performance Tests

(*Continued from Page* 349)

or 70°C brings about in a reasonable number of hours a deterioration similar to several years of natural aging in darkness. Since this type of aging at ordinary temperatures is chiefly oxidation, the rate of this deterioration depends upon the temperature. In fact on the basis of a chemical reaction, rubber goods should deteriorate about twice as fast at 25°C as they do at 15°C, and therefore it is impossible to specify that a definite number of hours in oxygen gives the same result as one year of natural aging since the temperature of natural aging may vary considerably.

It is often preferable to carry out an oxygen aging test at 70°C instead of the more frequent 60°C, particularly where very resistant compounds are involved, which prolong the time of testing at 60°C beyond a convenient limit.

Owing to the facility and reliability with which natural aging at ordinary temperaturers and in darkness may be practically duplicated, the oxygen aging test has grown from a small beginning in 1923 to a point where seventy-four companies are using the test. Close duplication of several years of natural aging in a few hours renders the determination of the aging properties of vulcanized rubber compounds very easy. Formulas and compounding ingredients whose aging properties are unknown can be investigated in very brief time.

Two actual examples will show the value of the oxygen aging test.

Having developed a new inner tube, a large American company found discordant results between the 70°C air oven test[3] and the oxygen aging test. The oven test indicated an excellent compound, while the oxygen aging test gave warning that the inner tubes would deteriorate badly. Trusting the more favorable oven test, the inner tubes were sold, and within one year $150,000 worth were returned because of bad aging, exactly as predicted by the oxygen aging test.

Another American company supplying inner tubes to busses on the Pacific Coast received complaint that the inner tubes became soft and tacky after 5000 miles. Other inner tubes were tested in service, and it was found that the best inner tube, judged by the oven test, was the worst on the road. Resort was then had to the oxygen aging test, and by its aid the company was able to develop inner tubes which are still in good condition after running 20,000 miles.

[3] *India Rubber World* 55, 127 (1916); *India Rubber J.* 61, 1163 (1920.)

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LATE MARKET PRICES

Crude, Scrap & Reclaimed Rubber • Cottons and Fabrics

JULY 2, 1927

COTTON

THE COTTON market, toward the end of June, showed that traders had become decidedly cautious in their operations and that many who had been actuated by fears concerning the new crop outlook, and were enthusiastic buyers on the recent advance, were not inclined to increase their lines until they could more firmly convince themselves that there was a basis for expectations of still higher prices. Aside from the influence of July liquidation, the market has felt in some degree the adverse influence of the first acreage estimate of the season. The acreage reduction estimate ranges from 10% to over 14%. The market, however, has been fairly firm. Spot price was 17.15. Late prices follow:

	High	Low	July 2 Close	June 17 Close
July	16.92	16.87	16.90	16.65
October	17.18	17.11	17.15	17.01
December	17.37	17.32	17.36	17.24
Jan.	17.43	17.37	17.41	17.31

Tire Fabrics

In the past fortnight the situation in tire fabrics showed considerable slowing up, and very little activity has been reported. A number of smaller sales were made for summer month deliveries of both carded peeler cords and Egyptians. Nearly all fabric mills held their quick deliveries, where available, for slightly higher than contracts. Recent prices follow:

CORD			
Peeler, carded, 25/5/3	lb.	.42 @	.43½
Peeler, carded, 23/4/3	lb.	.43 @	.44
Peeler, carded, 13/3/3	lb.	.38 @	.40
Peeler, carded, 15/3/3	lb.	.39 @	.41
Egyptian, carded, 23/5/3	lb.	.52 @	.55
Egyptian, combed, 23/5/3	lb.	.55 @	.57
CHAFERS			
Carded American, 8 oz.	lb.	.37½ @	.40
Carded American, 10 oz.	lb.	.42 @	.44
Carded American, 12 oz.	lb.	.38 @	.42
Carded American, 14 oz.	lb.	.37 @	.41
LENO BREAKER			
Carded American, 8¼ oz.	lb.	.37 @	.39
Carded American, 10¼ oz.	lb.	.38 @	.39½
SQUARE WOVEN			
Carded American, 17¼ oz. 23-11 ply	lb.	.42 @	.42½
Carded American, 17¼ oz. 10-5 ply	lb.	.37 @	.40

Sheetings

Business in sheetings has principally been done in small lots during the past two weeks, with a slight slowing up in activity. Prices, however, have been very firm. In most quarters the general situation is reported to be very sound, and it has been said that if orders failed to arrive in the next 60 days, equipment could be kept running meanwhile.

40-inch 2.50-yard	yd.	.11 @	.11½
40-inch 2.85-yard	yd.	.10 @	.10¼
40-inch 3.15-yard	yd.	.10⅝ @	.11½
40-inch 3.60-yard	yd.	.09⅛ @	.10
40-inch 3.75-yard	yd.	.08¾ @	.08¼
40-inch 4.25-yard	yd.	.07¼ @	.07½

Ducks

Mills are fairly sold ahead on all constructions, and August is said to be the earliest delivery possible on various enameling duck constructions. Toward the close of June the market was quite as limited as it had been for some weeks previously. Quotations were firm and mills were not quoting low in order to get small business. Late prices follow:

Belting and Hose	lb.	.33 @	.34
Enameling	lb.	.32 @	.36
Shoe Ducks	lb.	.29½ @	.33½
Single filling	lb.	.13 @	.16
Double filling	lb.	.15½ @	.17

RECLAIMED RUBBER

Reclaimers report an easing off in shipments within the past fortnight. The holiday season and the usual inventory period at this time of the year have combined to reduce factory operations. It is felt that after the middle of July conditions will improve materially. Prices are unchanged.

High Tensile			
Super-Reclaim No. 1 Black	lb.	.17½ @	.18
Super-Reclaim No. 2 Black	lb.	.14½ @	.15
High Tensile Red		.15 @	.15½
Shoe			
Unwashed	lb.	.08¼ @	.08⅝
Washed	lb.	.11 @	.11½
Tube			
No. 1 (Floating)	lb.	.18½ @	.19
No. 2 (Compounded)	lb.	.14 @	.14½
Tires			
Black, washed		.10½ @	.10¾
Black, unwashed		.08½ @	.08¾
Black selected tires	lb.	.09½ @	.10
Dark Gray	lb.	.12¾ @	.13¼
Light Gray	lb.	.13½ @	.14
White	lb.	.15½ @	.16
Truck, Heavy Gravity	lb.	.08½ @	.09
" Light Gravity	lb.	.09 @	.09½
Miscellaneous			
Mechanical Blends	lb.	.08 @	.08½
Red	lb.	.15 @	.15½

SCRAP RUBBER

Less activity of reclaimers coupled with a weaker market for crude rubber has made the scrap market easier with prices slightly lower than recent quotations. Reclaimers are not running to capacity and therefore are not demanding large scrap tonnages. Quotations follow:

[Prices to Consumer]

Auto tire peelings	ton	32.00 @	34.00
Standard White auto	ton	50.00 @	52.00
Mixed auto	ton	25.00 @	26.00
Bicycle tires	ton	24.00 @	25.00
Clean solid truck tires	ton	28.00 @	30.00
Boots and shoes	lb.	.01⅜ @	.01⅞
Arctics, trimmed	lb.	.01¼ @	.01⅜
Arctics, untrimmed	lb.	.00⅞ @	.01
Inner tubes, No. 1	lb.	.07 @	.07¼
Inner tubes, No. 2, compounded		.05¼ @	.05½
Inner Tubes, Red	lb.	.06¼ @	.06½
Air Brake Hose	ton	28.00 @	30.00
Rubber Hose	ton	15.00 @	16.00

CRUDE RUBBER

A SEE-SAW movement has more or less characterized the price situation of crude rubber in the outside market during the past fortnight. The severe decline which occurred in the early part of June has been partially made up by better prices in the first of July. On June 28 the bears renewed their attack on prices, encouraged by weakening London and Singapore markets. Dealers lowered the spot to September deliveries of standard sheets 1c. The tone was generally weak. With the beginning of July and the prospect of a three day holiday over Independence Day, business slackened and the market steadied. Prices on July 2 were as follows:

Plantations—			
Ribbed Smoked Sheets			
Spot	.35½ @	.35¾	
June	.35½ @	.35¾	
July/September	.35¾ @	.35⅞	
October/December	.35⅞ @	.36¼	
January/March	.36¾ @	.36¾	
First Latex, crepe spot	.35¾ @	.36	
Amber Crepe, No. 2, spot	— @	.32¾	
" " No. 3	.32 @	.32¼	
" " No. 4	— @	.31¾	
Brown Crepe, Rolled	.30 @	.30¼	
" " Clean, thin	.32¾ @	.33	
" " Specky	.31¾ @	.32¼	
Liquid Latex, per gal.	1.50 @	1.75	
" Specky	.31 @	—	
Pontianac—			
Bangermassin	Nominal		
Palembang	Nominal		
Prime Pressed	Nominal		
Sarawak	Nominal		
Paras—			
Up-river Fine	.30½ @	.31	
" Medium	.29 @	—	
" Coarse	.20 @	.20½	
Acre Bolivian, fine	.30½ @	.31	
Tapajos, fine	.39 @	—	
Cut Beni Bolivian, fine	.45 @	—	
Caucho Ball—			
Upper, shipment	.20½ @	.21	
Centrals—			
Corinto, scrap	.27 @	—	
Esmeraldo, sausage	— @	.20½	
Guayule, washed and dry	— @	.28	
Africans—			
Benguela, No. 2	Nominal		
Congo, upper, black	Nominal		
" " red	Nominal		
Balata—			
Block, Columbia	.39½ @	.40½	
" Cuidad	.34½ @	.35	
Gutta Percha—			
Siak	.24 @	—	
Red Macassar	3.00 @	—	

LONDON MARKET

Standard Ribbed Smoked Sheets—*Buyers*			
Spot	17 @	17⅛ d	
July	17 @	17⅛	
August	17⅛ @	17¼	
Oct./Dec.	17¼ @	17⅝	
Jan./March	17⅞ @	18	

SINGAPORE MARKET

Standard Ribbed Smoked Sheets—*Sellers*			
Spot	17⅛ @	—	
July	16⅞ @	—	

Recent daily closing prices on the Rubber Exchange of New York are shown on the Financial Page in the News Section of this issue. Daily spot prices of Ribbed Smoked Sheets are given in the Statistical Section.

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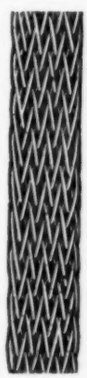

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Rubber Chemical Market Continues Inactive

Holiday Season Causes Let-up in Production with Result That Demand for Rubber Chemicals Shows Slight Decline

NEW YORK, July 5, 1927—Reports from rubber centers indicate a continuation of the smaller production schedules which have been in effect in tire plants as well as mechanicals goods factories. Drug Sundries and bathing accessories are holding their own, but the backward season has not helped the sale of these products. As a result of this situation and the intervention of the holidays just ended, shipment of rubber chemicals and compounding materials has continued to show a decline. As the season advances, however, leading factors expect conditions to improve. Prices as a whole have been firm with the exception of a number of the organic accelerators which are being quoted slightly less. Quotations follow:

ACCELERATORS

Organic

A-7	lb.	.70 @	.80
A-11	lb.	.75 @	.90
A-16	lb.	.65 @	.85
A-19	lb.	.75 @	.90
Aldehyde ammonia, crystals	lb.	.65 @	.70
Aniline oil, drums	lb.	.17 @	.17½
"BB"	lb.	— @	—
Captax	lb.	— @	—
Crylene	lb.	.70 @	—
paste	lb.	.50 @	—
Di-Ortho-Tolylguanidine	lb.	.85 @	.90
Diphenylguanidine	lb.	.68 @	.72
Ethylidene aniline	lb.	.60 @	.65
Excellerex	lb.	.55 @	.40
Formaldehyde Aniline	lb.	.38 @	.42
Grasselerator 102	lb.	.65 @	.70
Grasselerator 552	lb.	4.80 @	5.00
Grasselerator 808	lb.	1.15 @	1.35
Heptene	lb.	.55 @	—
Hexamethylene-tetramine	lb.	.65 @	.70
Lithex	lb.	.18 @	.20
Monex	lb.	3.25 @	—
Paraphenylenediamine	lb.	1.25 @	1.30
Piperidine-Piperidyldithio-Carbamate	lb.	4.80 @	5.00
Quinoidine	lb.	.40 @	—
R & H 40	lb.	.50 @	.55
R & H 50	lb.	.50 @	.55
Super-Sulphur No. 1	lb.	— @	—
Super-Sulphur No. 2	lb.	— @	—
Tensilac, No. 41	lb.	.60 @	.65
Thiocarbanilide, kegs	lb.	.26 @	.28½
Trimene	lb.	.75 @	—
base	lb.	1.20 @	1.35
Triphenylguanidine	lb.	.69 @	.73
Tuads	lb.	— @	—
Vulcone	lb.	.70 @	.74
Z. 88	lb.	.75 @	1.00
Z.B.X.	lb.	2.50 @	—
Zimate	lb.	— @	—

Inorganic

Lead, sublimed blue	lb.	.08¼ @	.08¾
Lead, white	lb.	.08¼ @	.08¾
Litharge, domestic	lb.	.09 @	.09½
Magnesia, calcined, light	lb.	.06 @	.12
heavy	lb.	.04 @	.04½

COLORS

Blacks (See Compounding Materials)

Blues

Prussian	lb.	.33 @	.35
Ultramarine	lb.	.08 @	.35

Browns

Siena, Italian	lb.	.04½ @	.08
Umber, Turkey	lb.	.04½ @	.06

Greens

Chrome, light	lb.	.27 @	.31
medium	lb.	.29 @	.32
dark	lb.	.31 @	.34
Chromium Oxide, bbl.	lb.	.28 @	.32

Reds

Antimony crimson, 15/17	lb.	.27 @	—
sulphur free	lb.	.48 @	.50
golden 15/17 F.S.	lb.	.16 @	.22
Indian English	lb.	.08 @	.10
Oximony	lb.	.13¼ @	—
Para toner	lb.	.13 @	.14
Red oxide, reduced	lb.	.10 @	.11
pure	lb.	.14 @	.15
Toluidine toner	lb.	1.75 @	1.85
Venetian red	lb.	.02 @	.06
Vermillion, quicksilver, English	lb.	1.55 @	1.65

Whites

Lithopone, Akrolith	lb.	.05¾ @	.06
Lithopone, Azolith	lb.	.05¼ @	.05¾
Lithopone, Vanolith	lb.	.10½ @	—
Titanox	lb.	.12 @	.12½
Calc. Base Pigment	lb.	.10½ @	.11
Zinc Oxide—American Process			
American Azo: ZZZ (lead free)	lb.	.06½ @	.07
ZZ (under 5% leaded	lb.	.06⅝ @	.07⅛
Zinc Oxide—French Process			
White seal	lb.	.11⅞ @	—
Green seal	lb.	.10⅞ @	—
Red seal	lb.	.09⅞ @	—

Yellows

Chrome	lb.	.17 @	.20
Ocher, French medium	lb.	.03 @	.03¼
domestic	lb.	.01⅝ @	.02

COMPOUNDING MATERIALS

Aluminum Flake (f.o.b. plant)	ton	21.85 @	24.50
Lydrate light	lb.	.16½ @	.17
Ammonia carbonate	lb.	.13½ @	.14
Are-O-Sel	ton	8.00 @	11.00
Asbestine	ton	14.75 @	18.00
Barium carbonate	ton	50.00 @	52.00
Barium Dust	lb.	.05 @	.06
Barytes southern off-color,	ton	12.00 @	18.00
Western prime white	ton	23.00 @	—
imported	ton	27.00 @	36.00
Basofor	lb.	.04½ @	—

Blacks

Arrow "Aerfloted"	lb.	.08 @	.12
Bone Black	lb.	.05½ @	.11
Carbon, compressed	lb.	.07½ @	.11½
" uncompressed	lb.	.07 @	.11
Drop Black	lb.	.06 @	.10
Lamp "	lb.	.12 @	.40
Micronex	lb.	.08 @	.12
Thermatomic carbon	lb.	— @	—
Velvetex carbon	lb.	.04 @	.07
Blanc fixe dry f.o.b. works	lb.	.04 @	—
Carrara filler	lb.	.01¾ @	.02
Catalpo (fact.)	lb.	.02 @	—
Chalk	lb.	.02½ @	.04½
Clay, China, domestic	ton	8.00 @	9.00
Aerfloted Suprex	ton	9.00 @	20.00
Blue Ridge, Dark	ton	— @	—
" " Light	ton	— @	—
Dixie	ton	— @	—
Langford	ton	— @	—
Mineral Flour, c. l. fob mine	ton	20.00 @	23.00
Tensulite		15.00 @	—
Glues, extra white	lb.	.20 @	.29
medium white	lb.	.19 @	.25
common bone	lb.	.14 @	.15
Graphite flake, bbls.	lb.	.06½ @	.10
Magnesia, carbonate	lb.	.07 @	.09
Mica, powdered	ton	90.00 @	100.00
Rotten Stone (powdered)	lb.	.02½ @	.04½
Soapstone, powdered	ton	15.00 @	22.00
Starch, powdered	cwt.	3.30 @	3.70
Talc, domestic	ton	16.00 @	18.00
Terra Alba	cwt.	1.15 @	1.75
Tripoli, white	lb.	.01¾ @	.02
Whiting, commercial	cwt.	.85 @	1.00
English cliffstone	cwt.	1.50 @	—
Quaker	ton	— @	—
Superfine	ton	10.00 @	12.00
Sussex	ton	— @	—
Vansulite	ton	12.50 @	—
Wood pulp XXX	ton	45.00 @	—
" " X	ton	25.00 @	—
Zinc Carbonate	lb.	.10 @	.12

MINERAL RUBBER

Genasco (factory)	ton	50.00 @	52.00
Granulated M.R.	ton	— @	—
Hydrocarbon, Hard	ton	— @	—
Hydrocarbon, Soft	ton	— @	—
320/340 M.P. hydrocarbon (c. l. factory)	ton	47.00 @	52.00
300/310 M.P. hydrocarbon (c. l. factory)	ton	42.00 @	47.00
Paradura	ton	62.50 @	65.00
Pioneer, MR, solid	ton	41.00 @	43.00
" —granulated	ton	51.00 @	53.00
Robertson, MR, solid	ton	34.00 @	80.00
M.R. (gran)	ton	34.00 @	80.00

SOFTENERS

Acids

Nitric, 36 degrees	cwt.	5.00 @	5.25
Sulphuric, 60 degrees	ton	10.50 @	11.50
66 degrees	ton	15..00 @	16.00
Tartaric, crystals	lb.	.31½ @	—

Acids, Fatty

Stearex	lb.	.10 @	.14
Stearic, single pressed	lb.	.10 @	.11
double pressed	lb.	.11½ @	.12
triple pressed	lb.	.13½ @	.14

Alkalies

Caustic soda, 76%	cwt.	3.76 @	3.91
Soda ash, 58% C.L.	cwt.	1.42½ @	1.45

Oils

Castor, No. 3 bbls.	lb.	.13¾ @	.14
Corn, crude, bbls.	lb.	.09¾ @	.10
refined	lb.	.11 @	—
Cottonseed, crude		.08 @	—
Cycline	gal.	.27 @	.34
Dispersol A (light)	lb.	.15 @	.16
" B (dark)	lb.	.14 @	.15
Fluxrite	lb.	.05 @	.06
Glycerine, C.P. drums	lb.	.26 @	.26½
Linseed, Raw C.L. bbl.	lb.	.09½ @	.10
Palm Lagos	lb.	.08½ @	—
Niger	lb.	.07½ @	—
Vansulol	lb.	.10½ @	—
Peanut, domestic, crude	lb.	.11 @	—
Petrolatum, white	lb.	.08⅞ @	.09
amber	lb.	.03¾ @	.04
dark amber	lb.	.03⅜ @	.03½
Pine, steam distilled	lb.	.70 @	—
Rapeseed, refined	gal.	.82 @	.83
Rosin, first rectified	gal.	.70 @	—
second rectified	gal.	.73 @	—

Resins and Pitches

Pitch, Burgundy	lb.	.06½ @	.07½
coal tar	gal.	.05½ @	.06
pine	bbl.	9.00 @	10.00
Rosin, grade K	bbl.	11.40 @	—
Pigmentar	gal.	.33 @	.41
Tackol	lb.	.09 @	.15
Tar Retort	bbl.	15.50 @	16.00
kiln burned	bbl.	16.00 @	16.50

Solvents

Acetone, pure	lb.	.14½ @	—
Alcohol denatured, No. 1 bbls.	gal.	.37½ @	.44½
Benzol, 90%	gal.	.28 @	—
pure		.29 @	—
Carbon bisulphide	lb.	.05½ @	.06¼
Carbon tetrachloride		.06¾ @	.07½
Motor gasoline, steel bbls.	gal.	.20 @	—
Naptha, V. M. & P.	gal.	.14 @	—
Turpentine, spirits	gal.	.78 @	.79
wood	gal.	.72 @	.78

Waxes

Beeswax	lb.	.58 @	.60
Carnauba, No. 1	lb.	.57 @	.59
Ceresin, white	lb.	.13 @	.14
Montan, crude	lb.	.07 @	.07½
Ozokerite, black	lb.	.30 @	—
green	lb.	.30 @	.32

Miscellaneous

RSL Mold Solution	gal.	.75 @	1.00

ANTI-OXIDANTS

Age-Rite	lb.	— @	—
Antox	lb.	.81 @	.83
VGB	lb.	.55 @	.66

SUBSTITUTES

Black	lb.	.08 @	.14
White	lb.	.10 @	.16
Brown	lb.	.10 @	.15

VULCANIZING INGREDIENTS

Sulphur Chloride (drums)	lb.	.03½ @	.06
Sulphur flour			
Superfine, bags	cwt.	2.20 @	2.80
" bbls.	cwt.	2.55 @	3.10
100% pure, refined, bags	cwt.	2.60 @	3.15
bbls.	cwt.	2.95 @	3.50
Vandex	lb.	— @	—

RUBBER CLAYS of the HIGHEST QUALITY

ARGOSITE CLAY

ULTRA FINE
REMARKABLY ADHESIVE
UNMATCHED PURITY

CONGAREE CLAY

EXCEEDING STANDARD
SPECIFICATIONS

UNITED CLAY MINES CORP'N. TRENTON, N. J.

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Heater Presses
Molds and Cores
Tubing Machines

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Est. 1900 Inc. 1919

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GENERAL MACHINE WORK

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A Section Devoted to Listings of Leading Producers and Distributors of Raw Materials, Machinery and Equipment, and Supplies for the Rubber Industry.

The Market Place

Chemicals and Compounding Materials — Machinery and Equipment—Crude, Reclaimed and Scrap Rubber—Fabrics—Rubber Products — Consulting Engineers.

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CARBON BLACK—CROW BRAND
LAMPBLACK
QUINOIDINE
R. W. Greeff & Co.
64 Water St., New York

ACCELERATORS
Grasselerator 102
Grasselerator 552
Grasselerator 808
Grasselli Chemical Co.
Rubber Service Dept.
347 Madison Ave., New York

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Manufacturers for forty years.
940 Old South Bldg., Boston, Mass.
612 Metropolitan Bldg., Akron, O.

CHEMICALS — Accelerators
Trimene Base, Heptene, Monex, Crylene, Lithex, Aniline Oil.
Clay—Mineral Flour, Seminole (Georgia).
Antioxidant—VGB, a proven product.
Labels—all-rubber two color brands.
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Para-Nitrosodimethylaniline
Thiocarbanilide
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Not only has the rapidly increasing number of advertisers in this section necessitated the addition of an extra page each issue, but the new arrangement of placing each listing in its proper classification will make THE MARKET PLACE of greater usefulness to our readers and of still greater value to each advertiser.

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Akron, Ohio

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ACCELERATORS
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THE MARKET PLACE Section Continued on Next Page

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The Market Place

Chemicals and Compounding Materials — Machinery and Equipment—Crude, Reclaimed and Scrap Rubber—Fabrics—Rubber Products — Consulting Engineers.

Chemical and Compounding Materials [continued]

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CONGAREE CLAY—Pulverized—Standard
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General Offices – – Trenton, N. J.

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For All Cures
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Manufactured from white marble
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Aero Brand, product of the highest purity from dependable source of supply.
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Camden New Jersey

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LIGHT - MEDIUM - HEAVY
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The New Jersey Zinc Sales Company
New York Pittsburgh Chicago
Cleveland San Francisco

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Machinery and Equipment

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Columbiana, Ohio
Paul A. Frank, Akron, Ohio, Agent.

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Tire Molds
Collapsible Tire Building Drums
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Akron, Ohio

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750 Frelinghuysen Ave. Newark N. J.

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So well known that you no longer have to *sell* it? A listing in this section will keep your name and product before all the buyers in the industry—and will keep it *sold! Try it.*

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MOLDS & CORES—Tire building machines; tire finishing stands; tubing machines; hydraulic presses.
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SPECIAL MACHINERY
SWING JOINTS
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The Bridgwater Machine Co.
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MANY BIG advertisers started with little space. Spaces in this section are small in size but big in returns. Try one!

THE MARKET PLACE Section Continued on Next Page

A Section Devoted to Listings of Leading Producers and Distributors of Raw Materials, Machinery and Equipment, and Supplies for the Rubber Industry.

The Market Place

Chemicals and Compounding Materials — Machinery and Equipment—Crude, Reclaimed and Scrap Rubber—Fabrics—Rubber Products — Consulting Engineers.

Machinery and Equipment [continued]

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Write for Descriptive Literature
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New and Old Rubber Scrap
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M. Norton & Co.
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RUBBER FACTORIES
use vast quantities of raw materials and equipment. Let the industry know how well you can serve it through a listing in this section.

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Then you should believe in telling the rubber industry all about them. The MARKET PLACE is the logical place to display your wares.

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"Goes a long way to make friends"
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Akron, Ohio

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Rubber— Crude, Scrap, Reclaimed

CRUDE RUBBER
We Solicit Your Inquiries
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Offices in Akron, Chicago, Boston.

RECLAIMED RUBBER—
Uniformity, reliability, cleanliness.
Pequanoc Rubber Co.
Butler, N. J.

RECLAIMED RUBBER
A standardized grade for every requirement.
U. S. Rubber Reclaiming Co., Inc.
100 E. 42nd St., New York, N. Y.
"44 Years Serving the Industry Solely as Reclaimers"

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of Standardized Quality.
NO. 188 FOR TUBES
Philadelphia Rubber Works Co.
New York Akron Philadelphia

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CAPACITY 250,000 POUNDS DAILY

GUAYULE—"Duro" Brand washed and dried ready for compounding.
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for all purposes.
Rubber Regenerating Co.
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RUBBER—Crude and scrap, all grades.
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Monatiquot Brands
Stedman Products Company
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Always Buying and Selling
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5 William St., Belleville, N. J.

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R. R. Olin Laboratories
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Specializing on Rubber Reclaiming
Organizing — Controlling — Research.
Buildings — Machinery — Formulas.
C. E. Bishop
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For
Various Rubber Stocks
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The Most Economical Form of Advertising

The Market Place Section of THE RUBBER AGE contains the *only* alphabetically arranged listings of small 'ads' available in the rubber industry. Your advertisement in this section will not only be easy to find, but it will produce excellent results at very moderate costs. Let us send you details.

STATISTICAL SECTION

TIRES & TUBES
CRUDE RUBBER

AUTOMOBILES
GASOLINE

THE AVERAGE daily spot closing price of ribbed smoked sheet in the New York market for the month of June was 37¼c, the lowest monthly average which rubber has touched since February, 1925, when ribbed smoked sheets averaged 36c. Similarly the London average for May-June was the lowest since the November-January quarter, 1924-25, namely 18.739 pence.

Department of Commerce figures relative to rubber invoiced to the United States in the two weeks of June 18 and 25 show an increase of 2,424 long tons in the week of June 18, and an increase of 3,010 long tons in the week of June 25. The total amount of rubber invoiced in the latter week amounted to 10,480 tons.

PLAN OF THE SECTION

The statistics included in this section have been chosen for their constant importance to the rubber industry. The tables are reprinted in the same relative position in every issue, each table being kept current by the addition of new figures as soon as they become available. The section accordingly affords the most up-to-date, complete and convenient statistical service in the industry.

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United States Rubber Imports and Exports
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Rubber Exports from Producing Countries
Rubber Imports into Consuming Countries

Re-exports of crude rubber during May totaled 2,782 long tons, a figure not equalled in the past two years and only approached in March of this year when 2,763 long tons were re-exported. Net imports for the May period were 33,761 long tons.

Gasoline consumption during May, according to figures from the Bureau of Mines, totaled 26,579,000 barrels, or an increase of 3,208,000 barrels from April, and an increase of 2,366,000 barrels over May of last year.

Contrary to the downward movement of monthly averages of rubber prices, cotton has gone steadily upward. The average price of spot cotton for the month of June was 16.85 cents, which compares with 16.07 cents in May and 14.75 cents in April.

U. S. Imports and Exports of Crude Rubber.

YEARS	Gross Imports: Long Tons	Gross Imports: Total Declared Value	Gross Imports: Average Declared Value per pound Cents	Re-exports: Long Tons	Re-exports: Total Declared Value	Re-exports: Average Declared Value per pound Cents	Net Imports: Long Tons
1921	185,394	73,772,677	17.76	5,716	2,414,924	18.86	179,678
1922	301,076	101,843,188	15.10	4,809	1,921,828	17.84	296,267
1923	309,144	185,060,304	26.72	8,772	5,672,319	28.87	300,372
1924	828,056	174,231,331	23.71	10,309	6,057,637	26.23	317,747
1925	396,642	429,705,014	48.36	14,827	19,847,753	59.76	381,815
1925:							
Jan.	32,898	22,406,756	30.41	1,162	963,593	37.02	31,736
Feb.	24,696	18,532,115	33.50	979	779,406	35.53	23,717
Mar.	33,072	25,146,691	33.94	1,345	1,105,119	36.69	31,727
Apr.	32,506	24,874,562	34.16	1,130	1,009,305	39.86	31,376
May	36,932	30,311,754	36.64	1,203	1,323,445	49.12	35,729
June	31,569	26,855,883	37.98	1,198	1,577,106	58.75	30,371
July	32,455	33,701,723	46.36	1,278	2,132,681	74.52	31,177
Aug.	33,412	39,834,348	53.22	1,131	1,623,258	64.08	32,281
Sept.	26,367	36,686,013	62.11	1,154	1,820,360	70.41	25,213
Oct.	34,651	50,027,338	64.45	1,132	1,989,291	78.43	33,519
Nov.	37,755	56,271,963	66.54	1,605	2,898,930	80.65	36,150
Dec.	40,329	65,055,868	72.02	1,510	2,625,359	77.61	38,819
	396,642	429,705,014	48.36	14,827	19,847,753	59.76	381,815
1926:							
Jan.	42,404	72,528,151	76.36	2,084	3,747,505	80.28	40,320
Feb.	32,865	58,733,370	79.78	1,430	2,280,168	71.17	31,435
Mar.	42,152	70,589,581	74.76	1,836	2,735,234	66.51	40,316
Apr.	34,544	48,742,539	62.99	1,128	1,605,093	63.58	33,416
May	29,756	36,896,080	55.35	1,052	1,558,987	66.17	28,704
June	24,900	34,498,561	61.85	1,105	1,371,217	55.41	23,795
July	35,820	33,061,470	41.20	1,554	1,743,854	50.09	34,266
Aug.	27,400	24,670,752	40.21	1,318	1,339,563	45.38	26,082
Sept.	37,112	32,625,082	39.02	1,437	1,519,870	47.20	35,675
Oct.	29,333	25,300,483	38.50	1,366	1,316,270	43.02	27,967
Nov.	38,925	34,661,631	39.97	1,482	1,320,461	42.00	37,443
Dec.	37,754	33,261,366	39.33	1,904	1,841,305	43.16	35,850
	413,338	505,817,807	54.63	17,671	22,470,583	56.77	395,667
1927:							
Jan.	43,340	36,753,719	37.99	1,526	1,444,734	42.22	41,814
Feb.	28,338	23,110,257	36.41	2,451	2,277,297	41.47	25,887
Mar.	35,514	28,693,026	36.07	2,763	3,249,665	52.50	32,751
Apr.	46,202	37,284,806	36.15	1,575	1,428,425	40.45	44,627
May*	34,413	——	37.63	2,782	2,501,562	41.74	33,761

*Official estimate based on arrivals in New York and Boston.

U. S. Consumption of Crude Rubber

(Rubber Association of America statistics raised to 100 per cent—All figures in long tons)

Figures on Monthly Basis

	1921	1922	1923	1924	1925	1926	1927
January	5,045	16,938	30,106	29,058	29,638	32,196	31,518
February	5,955	14,767	30,149	25,736	29,761	31,136	30,187
March	9,190	21,408	36,629	28,385	33,498	32,936	36,141
April	13,084	19,294	29,085	27,129	34,139	32,696	35,871
May	16,023	23,246	36,155	25,845	35,322	29,364	34,592
June	16,142	31,713	24,272	22,753	35,822	28,598	
July	18,310	24,522	17,685	23,396	36,053	27,577	
August	23,649	29,361	20,359	28,982	35,909	34,533	
September	16,705	24,410	17,594	31,497	31,691	32,904	
October	16,814	26,881	21,321	31,520	29,047	29,836	
November	14,105	24,950	20,437	27,289	28,853	28,080	
December	15,482	25,070	21,902	27,199	28,748	26,293	
TOTALS	170,504	282,560	305,694	328,769	388,481	366,149	

Figures on Quarterly Basis

Quarter	1921	1922	1923	1924	1925	1926
Jan./Mar.	65,463	127,360	96,776	87,609	95,263	94,301
Apr./Jun.			89,493	75,674	104,099	87,109
Jul./Sept.	105,962	155,067	55,621	83 813	99,493	93,793
Oct./Dec.			63,617	92,656	85,789	83,212
Total	171,425	282,427	305,507	339,752	384,644	358,415

Note: The Rubber Association estimates its monthly rubber consumption figures to be 90% complete. Up until 1925 the quarterly figures were likewise estimated to be 90% complete; beginning with 1925 an estimate of 92% completeness has been used. These estimates have been used in raising the figures in this table to 100%. The quarterly figures are generally regarded as the most authentic; the monthly figures may be accepted as preliminary.

Rubber Invoiced to the U. S.

(Reported by American Consuls—Quantities in Long Tons)

During the Week Ended	From Br. Malaya	From Ceylon	From Dutch East Indies	From London & Liverpool	Total
Apr. 23	5,548	1,099	1.241	475	7.463
Apr. 30	5,250	1,033	1,336	324	7,943
May 7	5,764	431	1,778	464	8,437
May 14	4,749	570	1,054	1,327	7,700
May 21	4,853	505	2,125	897	8,380
May 28	4,687	546	1,540	777	7,550
June 4	6,088	344	2,432	454	9,318
June 11	3,492	486	781	287	5,046
June 18	4,889	173	1,903	505	7,470
June 25	5,256	922	1,331	2,971	10,480

Daily Spot Closing Prices of Ribbed Smoked Sheet Rubber—*New York Market, in Cents per Pound*

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31 Average
1925																															
Jan.	—	39⅞	39⅝	—	39	39	39¼	38¾	—	38⅝	—	37⅞	39⅝	36⅝	—	35⅞	35⅝	—	34⅞	34⅝	35	35	36¼	36¼	—	35⅝	35⅝	35⅝	35	35	35⅝
Feb.	—	35⅝	34⅞	34½	34½	34½	35⅝	—	—	34⅝	35¼	—	35⅝	36	—	36⅞	36⅝	35⅝	36¼	36⅝	36⅝	—	—	37½	37½	37⅞	37⅞	38⅝	—	—	36
Mar.	—	38⅝	38⅜	—	38⅜	38⅜	39¾	—	—	39⅜	40¼	—	40⅜	40⅜	—	40⅝	40½	40⅝	41¼	41⅝	41⅝	—	—	42½	42½	43⅛	43⅛	43⅞	—	44½	41
Apr.	41¼	41⅝	41¼	41⅝	—	42⅞	42⅜	43½	—	—	—	89⅜	40⅜	40½	44⅜	44⅝	44⅝	41	44¼	44	44⅛	43⅜	43⅜	43⅜	44⅞	44⅞	44⅞	45⅞	—	44¾	42¾
May	45	—	—	47¼	46⅞	48⅝	50⅛	52½	55⅝	57	59	76⅜	74⅜	59⅜	60⅝	60⅝	64½	—	60⅛	63	61¾	60⅝	—	65	63¾	65⅞	69½	65⅞	—	45⅞	48⅝
June	69½	72	74⅜	76½	75⅝	75⅝	74	74	73⅝	74	75¼	74⅜	—	—	71⅛	71⅝	72⅜	73⅜	75½	76¼	—	61⅞	79⅞	—	63	63	68¾	65⅞	—	69½	58½
July	81⅞	81⅞	85⅝	—	88⅛	88⅛	90½	95⅛	94⅞	99⅞	106⅛	105⅛	110	105⅜	110⅜	117	116⅞	118⅜	117⅞	121	117⅛	119	117⅝	112¾	85⅜	82⅜	89⅜	85⅝	82⅜	85⅝	77¾
Aug.	94½	—	95½	88¾	85¾	86⅝	81⅞	79	80½	71⅝	72½	76½	81½	82½	—	77¾	78¼	80½	80¼	83½	82½	82½	—	82	82½	85¼	107¾	85½	89¾	93¾	103⅜
Sept.	88¼	87¼	85	81¼	81½	—	97½	78¼	80½	83	86½	92	92½	97½	93½	93¾	92¾	92	94¼	—	92	93¼	93½	90	89	85½	89⅝	91½	91½	90	88⅞
Oct.	91¼	91¼	92	—	94½	97	—	99	99¼	101	—	97½	95½	95½	97	99¼	99	99	101¼	102	99¼	99¼	99¼	99¼	—	108¼	99½	101½	99¼	100¼	98
Nov.	99¾	99¾	98¾	98¾	98¾	100	100¾	109	98¾	99½	100¾	101¾	104½	105¼	109	109¾	107	109¾	110¾	110½	110½	110½	109	110½	—	—	108½	108¾	107	104¾
Dec.	106⅞	108½	107¾	107¼	108¾	—	108	109	109¼	106	105½	105½	—	101	101	90¼	93	88¼	86¾	—	88¼	90¼	88¾	88¾	88¾	91	93	91¼	91¼	91¼	98½
1926																															
Jan.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Feb.	67	67⅛	66¼	66⅜	66⅜	69	—	69	67	65	66	66	65½	61	63	63	60½	60	59⅜	59	59	60	61	61	61	61	61	61	61	61	79½
Mar.	55	58	53	53⅜	53½	57½	—	56	55½	61	60	63	61½	62	61	62	61	62	61	61	61	61	61	61	61	61	61	61	61	61	62¾
Apr.	59	—	59	—	59	58	56½	56½	58	53	60	51½	50½	60½	62	60½	61	61	61½	61½	61	61	61	61	61	61	61	61	58½	58	59
May	48½	—	50	50¼	49¼	49¾	49½	49½	49	49	49	49	48⅞	48⅝	48⅝	48⅝	48	47½	47½	47½	47¼	47¼	47¼	47¼	47¼	47¼	47¼	48	48	48½	51¼
June	41¾	42	41¾	42	41¼	41¼	41¾	42	43	42	42	43	42	42	42	42	42	42	43	43	44	44	44	44	44	44	45	45	45	45	47¾
July	42	42	42	42	—	—	41½	41½	41¾	41¾	41¾	41½	41½	41½	41	41½	41	41	40	40	40	40	40	40	40	40	40	40	40	42	42½
Aug.	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40¼	39½	41
Sept.	43	43	43	—	43¼	42¾	42½	42½	42½	42½	42½	42½	42½	42½	42½	42½	42½	42½	42½	42½	42½	42½	42½	42½	42½	42½	42½	42½	42½	42½	42½
Oct.	41¼	41¼	41	41¼	41¼	41½	41½	41½	41½	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	37	38½
Nov.	36¾	37½	37½	37½	—	37	37	37½	37	37	37½	37½	37½	37½	37½	37½	37½	37½	37½	37½	37½	37½	37½	37½	37½	37½	37½	38	38½	38¼	38¼
Dec.	—	88½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½
1927																															
Jan.	—	88½	87½	89	89¼	89¾	89¾	89¾	89¾	89¾	89¾	89¾	89¾	89¾	89¾	89¾	89¾	89¾	89¾	89¾	89¾	89¾	89¾	89¾	89¾	89¾	89¾	89¾	89¾	89¾	89¾
Feb.	37⅞	37⅞	37⅝	37⅝	37⅝	37⅝	37⅝	37⅝	37⅝	37⅝	37⅝	37⅝	37⅝	37⅝	37⅝	37⅝	37⅝	37⅝	37⅝	37⅝	37⅝	37⅝	37⅝	37⅝	37⅝	37⅝	37⅝	37⅝	37⅝	37⅝	37⅝
Mar.	39¾	39¾	40	40¼	40¼	40¼	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾
Apr.	41⅛	41⅛	—	—	41	41	41⅛	41⅛	41⅛	41⅛	41⅛	41⅛	41⅛	41⅛	41⅛	41⅛	41⅛	41⅛	41⅛	41⅛	41⅛	41⅛	41⅛	41⅛	41⅛	41⅛	41⅛	41⅛	41⅛	41⅛	41⅛
May	—	40½	40¾	40½	40½	41	40¾	—	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾
June	40⅝	40¾	40½	40⅛	—	39⅝	39½	38¾	37⅞	37⅞	37¾	37¾	—	—	35⅛	34½	35⅛	35⅛	—	34¾	35⅝	36⅜	36¾	36¾	36¾	36¾	36¾	36¾	36¾	36¾	37½
July	35½	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Aug.																															
Sept.																															
Oct.																															
Nov.																															
Dec.																															

Average Spot Closing Prices--Ribbed Smoked Sheets

(New York Market)

Average Price per Pound for Years 1910-1921

Year	*Cents*	*Year*	*Cents*	*Years*	*Cents*
1910	206.60	1914	65.33	1918	60.15
1911	141.30	1915	65.85	1919	48.70
1912	121.60	1916	72.50	1920	36.30
1913	82.04	1917	72.23	1921	16.36

Average Monthly Price per Pound since 1922

Months	1922 *Cents*	1923 *Cents*	1924 *Cents*	1925 *Cents*	1926 *Cents*	1927 *Cents*
Jan.	18.82	32.73	25.86	36.71	79.50	38.75
Feb.	16.12	35.14	25.29	36.01	62.25	38.25
Mar.	14.53	34.21	22.83	41.00	59.00	41.04
Apr.	15.99	32.48	22.51	43.64	51.25	40.86
May	15.25	27.39	18.89	58.47	47.75	40.76
June	15.11	26.88	18.81	77.26	42.50	37.25
July	14.67	26.10	22.16	103.16	41.03	
Aug.	13.93	28.84	26.17	82.99	38.50	
Sept.	14.44	28.95	27.56	88.88	41.00	
Oct.	19.78	26.93	31.13	98.01	42.50	
Nov.	23.88	27.14	34.33	104.80	38.50	
Dec.	27.42	26.60	37.88	98.51	38.25	
Average for Year	17.50	29.45	26.20	72.46	48.50	

London Closing Prices of Ribbed Smoked Sheet

(In pence per pound)

Fifth Restriction Year—Third Quarter

Day	*May*	*June*	*July*	*Day*	*May*	*June*	*July*
1	—	19¾	17	16	19¾	16⅞	
2	19⅝	19½	—	17	19⅝	17¼	
3	19¾	19⅝		18	19¾	17	
4	19¾	—		19	19¾	—	
5	19⅞	—		20	19¾	16¾	
6	19⅞	—		21	19¾	17⅛	
7	19⅞	19⅛		22	—	17½	
8	—	18⅞		23	19¾	17¾	
9	19⅞	18½		24	19⅞	17⅞	
10	19⅞	—		25	19⅞	17¾	
11	19¾	18¼		26	19⅞	—	
12	19¾	—		27	19¾	17⅞	
13	19¾	18		28	19¾	17⅞	
14	19¾	17⅞		29	—	17¼	
15	—	17¼		30	19¼	17	
				31	19¾	—	

(The average price for the period for which daily prices are reported above is approximately 19.392 pence. The British Colonial Secretary has announced that only 60% of the standard production will be exportable from the restricted area during the next quarter if the price during the entire current quarter does not average at least 21 pence.)

Average Price in Previous Quarters

Quarter	1922-23	1923-24	1924-25	1925-26	1926-27
Nov.-Jan.	14.285	14.175	17.9983	46.709	19.265
Feb.-Apr.	16.858	12.917	19.856	28.103	19.696
May-June	14.242	10.974	38.469	21.001	18.739
Aug.-Oct.	14.944	14.632	43.269	20.199	

Spot Closing Cotton Prices

(Middling Upland Grade—New York Market)

Recent Daily Price Per Pound

Day of Month	*June Cents*	*July Cents*	*Day of Month*	*June Cents*	*Day of Month*	*June Cents*	*July Cents*
1	16.95	17.10	11	17.05	21	16.85	
2	17.00	17.15	12	—	22	16.95	
3	18.85		13	16.60	23	16.85	
4	16.75		14	16.80	24	16.80	
5	—		15	16.95	25	16.85	
6	16.35		16	16.90	26	—	
7	16.40		17	16.95	27	16.75	
8	16.60		18	16.90	28	17.05	
9	17.10		19	—	29	16.95	
10	17.05		20	17.05	30	17.05	
					31	—	

Average Monthly Price Per Pound

Month	1925 *Cents*	1926 *Cents*	1927 *Cents*	*Month*	1925 *Cents*	1926 *Cents*	1927 *Cents*
Jan.	23.99	20.85	13.42	Aug.	23.72	18.57	
Feb.	24.70	20.60	14.10	Sept.	23.79	17.02	
Mar.	25.64	19.35	14.32	Oct.	21.77	13.14	
Apr.	24.54	19.13	14.75	Nov.	20.94	12.86	
May	23.41	18.92	16.07	Dec.	20.06	12.68	
June	24.13	18.57	16.85	Average for Year	23.45	17.53	
July	24.68	18.71					

Stock of Crude Rubber in the U. S.

(All Quantities in Long Tons)

At	ON HAND			AFLOAT			AND AFLOAT ON HAND		
End of	1925	1926	1927	1925	1926	1927	1925	1926	1927
Jan.	60,870	55,198	76,172	36,759	46,296	45,312	97,629	100,434	121,484
Feb.	54,109	58,035	91,186	41,475	46,935	42,166	95,584	104,970	133,352
Mar.	52,494	61,822	85,740	40,577	43,567	49,600	93,071	105,389	135,340
Apr.	50,143	55,261	92,757	53,465	41,905	38,963	103,608	97,166	131,720
May	52,064	64,360	94,563	46,846	40,303	33,157	98,910	104,663	127,720
June	50,997	60,460		51,202	40,907		102,199	101,367	
July	46,245	64,900		46,003	38,062		92,248	102,962	
Aug.	42,354	60,870		41,254	37,360		83,608	98,230	
Sept.	36,367	62,078		55,151	42,464		91,518	105,542	
Oct.	34,085	64,989		51,098	52,930		85,183	117,919	
Nov.	34,885	69,385		42,692	47,321		86,577	116,696	
Dec.	51,215	72,520		48,208	52,020		99,423	124,540	

(Rubber Association of America figures raised to 100%.)

Stock of Crude Rubber in London

(No. of tons in Wharves and Warehouses, including Latex)

At End of:	1920	1921	1922	1923	1924	1925	1926
January	19,300	56,573	67,252	73,498	57,460	27,172	9,994
February	18,329	59,439	67,623	70,483	56,732	23,425	10,004
March	18,969	63,913	66,670	63,438	55,647	18,104	13,750
April	20,072	68,759	68,637	58,770	54,559	12,949	18,951
May	20,921	70,403	70,146	54,439	51,615	5,895	20,896
June	22,517	69,408	71,597	51,050	51,115	5,318	23,894
July	25,346	71,065	71,515	49,937	52,073	4,258	27,727
August	30,674	73,211	72,112	48,427	49,700	4,619	30,764
September	35,504	72,175	70,977	54,523	44,011	5,453	35,077
October	41,743	69,229	68,536	58,891	37,523	5,086	42,141
November	45,550	70,786	68,548	60,074	33,593	3,869	44,057
December	50,652	69,792	72,299	60,246	29,488	5,697	48,921

At End of Recent Weeks

1926	First Saturday	Second Saturday	Third Saturday	Fourth Saturday	Fifth Saturday
October	36,065	37,226	39,650	41,080	42,141
November	43,045	43,299	44,553	43,859	——
December	44,395	46,349	47,324	48,382	——
1927					
January	48,948	50,756	52,484	53,662	54,786
February	55,740	56,939	56,962	58,659	——
March	59,945	61,516	61,300	63,167	——
April	62,634	63,861	65,033	65,511	67,034
May	68,187	68,041	66,668	67,054	
June	67,105	67,454	66,894	64,486	

Rubber in Singapore and Penang

(Stocks held by Dealers—Quantities in Long Tons)

End of	1925	1926	1927	End of	1925	1926	1927
Jan.	15,925	15,726	25,440	July	15,894	23,101	
Feb.	17,320	13,653	26,766	Aug.	17,251	23,362	
Mar.	17,261	18,389	27,844	Sept.	16,526	25,997	
Apr.	15,368	16,328	24,543	Oct.	15,346	26,614	
May	15,804	16,967	25,133	Nov.	19,788	25,486	
June	15,884	19,416		Dec.	18,840	26,443	

Rims Inspected and Passed in U. S.

(Tire & Rim Association Reports)

	Total	Per Cent Balloons		Total	Per Cent Balloons
1923	23,140,620	0.6	1925	26,001,664	66.8
1924	21,863,311	19.7	1926	24,199,524	78.8
1926			1927		
July	2,123,368	84.8	January	1,489,078	77.0
August	2,378,850	82.3	February	1,753,224	84.4
September	2,365,518	80.7	March	2,071,989	85.1
October	1,828,539	76.9	April	2,060,868	88.0
November	1,210,472	77.0	May	2,169,208	86.9
December	1,096,429	76.7	June		

U. S. Consumption of Gasoline

(In Barrels of 42 Gallons)

MONTHS	1924	1925	1926	1927
January	11,918,000	14,386,000	17,582,000	17,888,000
February	9,626,000	13,210,000	15,814,000	18,240,000
March	10,961,000	14,890,000	19,302,000	22,464,000
April	14,583,000	19,013,000	20,848,000	23,371,000
May	15,889,000	20,459,000	24,213,000	26,579,000
June	16,421,000	20,724,000	23,803,000	
July	18,610,000	22,879,000	24,752,000	
August	19,825,000	22,323,000	26,912,000	
September	16,871,000	20,177,000	22,929,000	
October	18,029,000	19,826,000	23,973,000	
November	16,607,000	18,024,000	20,618,000	
December	15,663,000	17,954,000	21,419,000	
TOTAL	185,003,000	223,865,000	262,165,000	

U. S. Tire and Tube Statistics

(All Figures Represent Thousands)

AUTOMOBILE CASINGS

Figures for Recent Years

	1922	1923	1924	1925	1926
Production	40,932	45,259	51,633	60,845	61,237
Shipments	39,987	45,204	50,120	59,262	59,002
Inventory[2]	6,132	5,772	7,427	8,142	10,456

Figures for Recent Months

	PRODUCTION			SHIPMENTS			INVENTORY		
	1925	1926	1927	1925	1926	1927	1925	1926	1927
Jan.	4,740	4,587	4,965	4,013	2,974	4,932	7,949	9,947	10,432
Feb.	4,908	4,865	5,095	3,924	3,436	4,458	8,928	11,164	11,075
Mar.	5,276	5,456	6,276	4,657	4,561	5,701	9,510	12,004	11,583
Apr.	5,341	5,346	6,299	5,498	4,980	5,701	9,088	12,461	12,122
May	5,467	5,023		5,954	5,211		8,611	12,343	
June	5,418	5,422		6,737	5,724		7,243	11,968	
July	5,587	4,950		6,298	6,337		6,421	10,592	
Aug.	5,607	5,872		4,760	6,744		7,261	9,732	
Sept.	5,007	5,706		4,569	6,040		7,681	9,318	
Oct.	4,505	5,103		5,580	4,544		6,670	9,917	
Nov.	4,229	4,324		3,671	3,733		6,955	10,297	
Dec.	4,760	4,683		3,601	4,718		8,142	10,456	

AUTOMOBILE INNER TUBES

Figures for Recent Years

	1922	1923	1924	1925	1926
Production	50,850	60,116	70,706	82,614	76,618
Shipments	49,673	59,072	68,016	81,004	71,591
Inventory[2]	7,643	8,425	11,052	11,313	16,200

Figures for Recent Months

	PRODUCTION			SHIPMENTS			INVENTORY		
	1925	1926	1927	1925	1926	1927	1925	1926	1927
Jan.	6,343	6,809	5,337	5,576	3,723	6,016	11,570	14,361	15,585
Feb.	6,339	6,825	5,658	4,971	3,736	5,120	13,023	17,090	16,075
Mar.	7,000	7,030	7,184	5,711	4,987	6,157	14,236	19,131	17,096
Apr.	6,851	6,554	7,373	6,704	5,051	6,359	13,618	20,674	17,801
May	6,846	6,149		8,040	6,304		12,501	21,141	
June	6,942	6,171		9,032	6,898		10,409	20,243	
July	7,544	5,729		9,140	8,569		8,635	17,267	
Aug.	7,618	7,424		6,923	9,579		9,271	15,462	
Sept.	7,254	7,590		6,665	7,762		9,950	15,312	
Oct.	6,612	6,208		7,845	5,474		8,726	15,929	
Nov.	6,266	4,852		5,406	4,045		9,491	16,604	
Dec.	6,999	5,277		4,991	5,463		11,313	16,200	

(1) Rubber Association of America figures, raised to 100%. The Association estimates its figures to be 75% representative or complete when issued and that basis has been accepted when preparing the statistics in this table.

(2) Held by manufacturers at end of period indicated.

Automobile Production

	Passenger Cars			Trucks		
	Total	United States	Canada	Total	United States	Canada
1920	1,883,158	1,799,522	83,636	322,039	311,531	10,508
1921	1,514,000	1,452,902	61,098	147,550	142,402	5,148
1922	2,397,827	2,302,923	94,904	251,434	244,285	7,149
1923	3,719,164	3,589,936	129,228	378,288	361,078	17,210
1924	3,262,764	3,144,999	117,765	378,106	360,625	17,481
1925	3,817,639	3,678,328	139,311	498,019	475,941	22,078
1926						
January	284,703	272,922	11,781	33,461	29,763	3,698
February	334,524	319,763	14,761	41,685	37,608	4,077
March	399,105	381,116	17,989	49,233	44,848	4,385
April	401,836	383,907	17,929	53,887	50,314	3,573
May	394,569	373,140	21,429	51,343	47,838	3,505
June	358,360	339,542	18,818	47,043	44,110	2,933
July	328,816	315,863	12,953	41,847	39,592	2,255
August	393,040	380,258	12,782	47,907	45,404	2,503
September	363,537	350,913	12,624	51,299	46,428	4,871
October	300,142	289,547	10,595	46,965	42,890	4,075
November	226,278	219,504	6,774	39,410	36,356	3,054
December	143,413	137,361	6,052	30,002	28,302	1,700
TOTAL	3,928,323	3,766,336	161,487	534,082	493,458	40,629
1927						
January	208,718	196,973	11,745	40,874	37,243	3,631
February	275,458	260,632	14,826	41,947	38,118	3,829
March	360,754	341,665	19,089	48,590	45,056	3,534
April	353,961	333,071	20,890	48,216	44,495	3,721
May	374,259	352,268	21,991	47,890	44,173	3,717
June						
July						
August						
September						
October						
November						
December						

Exports of Crude Rubber from Principal Producing Countries

(Figures in Long Tons)

	BRITISH MALAYA[1]						DUTCH EAST INDIES[3]							
	Gross Exports	Gross Exports minus Imports	Ceylon[2]	India & Burma[3]	Sarawak[4]	British North Borneo[3]	Siam[4]	Java & Madura	Sumatra E. Coast	Other D.E.I.	Fr. Indo-China[3]	Amazon Valley[4]	All Other[5]	World Total[1]
1923	252,016	70,432	181,584	37,112	6,416	5,705	4,237	1,718	32,938	48,402	43,422	5,606	19,127	7,856	404,123
1924	259,706	108,524	151,182	37,351	7,697	6,699	4,621	2,962	42,446	53,483	80,347	6,688	22,906	9,065	425,447
1925	316,825	158,022	158,803	45,684	10,082	8,413	5,424	5,394	46,643	62,678	119,271	7,881	24,079	13,797	508,149
1926:															
Jan.	30,452	10,237	20,215	4,058	1,273	416	472	289	4,397	6,277	8,081	915	1,697	1,805	49,895
Feb.	30,440	8,306	22,134	4,941	725	488	450	253	4,474	5,734	6,801	554	2,169	1,978	50,701
Mar.	35,012	14,800	20,212	5,708	1,113	792	561	418	4,865	5,612	11,880	573	2,395	1,899	56,028
Apr.	23,727	10,565	13,162	3,484	590	679	374	293	4,522	4,598	6,208	410	1,778	1,529	37,627
May	31,231	10,604	20,627	3,600	691	927	410	279	4,742	5,293	8,606	502	2,144	1,464	49,285
June	30,624	11,764	18,860	2,906	452	779	512	275	5,440	6,111	9,844	549	1,367	1,279	49,374
July	28,824	15,280	13,544	4,800	938	911	420*	439	4,929	5,522	12,864	1,521	1,246	1,148	48,282*
Aug.	34,625	13,595	21,030	5,246	521	890	420*	316	4,418	3,472	10,349	378	1,411	1,997	49,548*
Sept.	35,913	13,972	21,941	6,027	652	888	420*	457	4,326	6,757	10,971	681	1,463	822	55,405*
Oct.	39,367	15,203	24,164	6,026	635	805	420*	385	4,193	6,988	11,513	661	1,616	1,023	58,429*
Nov.	34,302	12,201	22,101	4,687	1,111	685	420*	285	4,060	5,746	8,998	718	1,780	1,259	51,850*
Dec.	36,811	14,716	22,095	6,361	1,177	895	420*	338	5,025	7,106	12,333	790	2,492	714	59,746*
	391,328	151,243	240,085	58,844	9,878	9,155	5,299*	4,027	55,391	69,216	118,448	8,252	21,558	16,017	616,170*
1927:															
Jan.	34,946	14,995	19,951	6,697	921	959	500*	304	4,184	6,705	10,541	941	3,096	981	55,780*
Feb.	27,528	11,607	15,921	3,571	1,123	522	500*	360	4,707	6,526	10,634	675	2,476	1,098	48,113*
Mar.	41,346	17,464	23,882	7,141	1,469	997	500*	432	5,657	7,003	12,490	733	1,800*	1,350*	63,454*
Apr.	29,041	13,069	15,972	3,349		984		526				557			
May				3,124											
June															
July															
Aug.															
Sept.															
Oct.															
Nov.															
Dec.															

(1) Malayan net exports cannot be taken as production since imported rubber is largely wet native rubber which is reduced about one-third in weight by remilling; rubber exported as latex is not included which on a basis of 3½ pounds per gallon amounted to 115 tons in 1923, 1,117 in 1924, 3,618 in 1925, and 3,263 in 1926. (2) Ceylon Chamber of Commerce statistics until 1926; rubber exported as latex is not included—such shipments were equivalent to 18 tons in 1923, 93 tons 1924, 6 tons 1925, and about 20 tons in 1926. (3) Official statistics. (4) Imports into Singapore and Penang. (5) Exports from "Other D.E.I." are chiefly wet native rubber which is reduced about one-third in weight by remilling; rubber exported as latex is not included which on a basis of 3½ pounds per gallon amounted to 2,342 tons in 1923, 1,008 tons 1924, 2,239 tons 1925, and about 60 tons in 1926. In 1926, 196 tons of latex sprayed rubber and 125 tons of ficus rubber were exported from Java and Madura. (6) Calculated from official import statistics of principal consuming countries: viz., United States, United Kingdom, France, Germany, Italy, Belgium, and Netherlands. (7) This total includes the third column for British Malaya, "Gross Exports minus Imports," and all the figures shown for the other territories. *Figure is provisional; final figure will be shown immediately it becomes available.

Net Imports of Crude Rubber into Principal Manufacturing Countries

(Long Tons)

	United States	United Kingdom	France (abd)	Germany	Canada (ac)	Japan (ac)	Italy	Russia (ce)	Australia (cf)	Belgium (d)	Netherlands	Sweden (abcd)	Norway (abc)	Denmark (abd)
1919	236,977	42,671	19,951	5,584	8,770	10,688	9,894	75	733	3,995	2,771	2,032	437	673
1920	248,762	56,844	15,868	11,890	11,912	6,015	6,123	62	1,040	3,840	5,510	1,567	241	479
1921	179,678	42,087	16,981	21,920	8,248	22,981	3,906	165	554	1,705	1,022	813	178	251
1922	296,267	11,724	27,644	27,546	9,366	16,449	6,430	2,453	2,649	172	−3,807	1,248	321	87
1923	300,372	12,700	31,067	18,519	13,299	17,181	8,489	4,506	1,631	2,184	792	1,391	448	354
1924	317,747	−11,550	34,488	22,727	14,420	19,612	8,764	824	3,127	2,688	−807	1,781	669	473
1925	381,815	4,061	36,911	33,937	19,825	12,743	11,412	7,088	4,217	2,930	875	1,690	701	440
1926	395,667	84,865	39,390	22,775	20,253	18,125	9,809	6,529	7,860	2,498	2,665	2,125	609	575
1926:														
January	40,345	6,886	3,170	703	2,188	892	760	332	358	76	154	123	46	51
February	31,435	3,114	3,513	1,113	1,881	741	1,041	643	432	143	89	171	82	94
March	40,316	8,907	4,790	1,342	2,079	864	1,037	832	469	129	227	213	31	55
Apr.	33,416	8,275	4,834	1,781	1,624	1,868	865	402	431	71	93	204	27	23
May	28,705	6,773	2,937	1,848	1,239	1,010	705	200	386	186	241	110	24	47
June	23,795	5,894	2,827	1,655	1,188	1,465	1,070	983	546	269	214	178	20	34
July	34,266	6,768	2,603	2,202	1,552	1,447	800	132	586	295	480	195	34	27
Aug.	26,081	7,327	2,819	2,110	1,888	1,284	796	655	1,159	303	596	199	52	55
Sept.	35,675	8,843	2,900	2,029	1,355	1,922	819	472	1,125	283	430	159	43	27
Oct.	28,110	8,082	2,962	2,423	1,865	2,396	645	585	889	301	2	210	63	43
Nov.	37,673	9,247	3,194	3,007	1,548	3,380	832	568	802	194	−18	179	65	50
Dec.	35,850	4,749	3,341	2,562	1,846	856	439	725	677	248	157	184	122	69
1927:														
January	41,815	10,192	3,732	2,481	1,936	1,227	672	803	508	296	193	164	53	52
February	25,886	7,692	3,708	3,103	2,620	1,902	601	907	581	502	153	191	53	27
March	32,752	9,049	2,328	3,475	3,760	1,578	852	784		454	86	219	46	76
April	44,627	7,875	2,693	2,393	1,509	2,181		1,972		448		59		
May														
June														
July														
Aug.														
Sept.														
Oct.														
Nov.														
Dec.														

a—Including gutta percha. b—Including balata. c—Reexports not deducted. d—Believed to include scrap and reclaimed rubber. e—Russian statistics are exports from United Kingdom only to Russia. f—Australian annual statistics including 1924 are exports to Australia from Malaya, Ceylon, Dutch East Indies and United Kingdom; monthly figures and total for 1925 are exports from Malaya, Ceylon, and Java only. −Minus sign, reexports in excess of imports. *All statistics from original official trade returns.*

REVIEW DESK

AMERICA'S GREATEST STAKE IN RUBBER. By Clement Schwinges. Outlook Magazine, New York, June, 1927.

When the popular type of magazines, in contra-distinction to trade journals, begin to publish articles relative to the various activities of the rubber industry, it is an indication of a growth of general public interest in what is back of the rubber products that are being manufactured throughout the world today. While this article in the Outlook Magazine presents nothing new to those who are familiar with rubber growing and manufacturing, the author has given an accurate and interesting account of the establishment of a rubber plantation in Sumatra. This plantation, which he uses merely as an illustration of how rubber is grown throughout the Middle East, is the H. A. P. M. (Hollandisch-American Plantage Matschappij) a subsidiary of the U. S. Rubber Co. The article outlines the first effort of the U. S. Rubber Co. to grow rubber for its own use, first in northern Brazil and later in Sumatra. The Brazilian experiment was abandoned because the Government was not amenable to the company's interests, but the Sumatra plantation flourished so successfully that the H. A. P. M. is the largest single plantation in the world, consisting of nearly 80 square miles of planted rubber.

* * * *

THE WEATHER VEIN. Published quarterly by the Carrier Engineering Corporation, Newark, N. J. Vol. 7. No. 2.

This small publication carries articles about the various industries which use the air conditioning appliances manufactured by the Carrier Engineering Corporation. This company builds and installs apparatus in factories which regulate air temperatures, providing drying equipment, air cooling and circulation, refrigeration, heating and ventilating. The present issue of the publication describes the manufacture of cigars, and shows the use made of air conditioning in this industry.

* * * *

SELECTION AND CARE OF GARDEN HOSE. Bureau of Standards Circular 327. Department of Commerce. 12 Pages. Washington, D. C.

As an aid in the selection, use and preservation of garden hose, together with information relative to the manner of its manufacture, this circular is distinctly useful. The design and manufacture of the three types of hose commonly used and known as "wrapped," "braided" and "cotton rubber-lined" are described in some detail. The new lead press or lead jacketing process of vulcanizing braided hose is also described. The circular contains a chart showing the discharge capacities of 1/2 inch, 5/8 and 3/4 inch hose under different pressures, and illustrations of the different types of hose on the market.

* * * *

FOREIGN AGENCY AGREEMENTS. By William G. Marvin. Published by the American Credit Underwriters, Inc. New York. 19 Pages.

The forming of agency relationships with foreign firms brings up a series of important legal points which are carefully detailed in this publication. The booklet should be of especial service to rubber manufacturers who contemplate establishing agencies in foreign lands. The author is a member of the international law firm of Marvin and Bergh, and is general counsel of the American Manufacturers Foreign Credit Insurance Exchange.

* * * *

WORM GEARS AND DRIVES. Published by Fawcus Machine Co., Pittsburgh, Pa. Bulletin E. 31 Pages.

This bulletin is divided into two parts, the first containing illustrations and descriptions of various types of worm gears as manufactured by the company, and the second containing data for engineers.

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Insure GOOD-WILL and it will Insure GOOD-BUSINESS

The greatest asset of your business is Good Will, and "Good Will is the disposition of the customer to return to the place where he has been well treated." *

Each of your tires and the average performance of all your tires can gain this confidence of users only through uniformly excellent performance.

Such performance requires the use of Uniform Carbon Blacks, whose high quality is constantly maintained by loyal experienced workers and chemical supervision to a standard that inspires confidence, makes staunch friends and insures good business.

* U. S. Supreme Court Decision.

Carbon Black

GODFREY L. CABOT, INC.
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